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PRACTICAL HOME AND SCHOOL METHODS

OF
STUDY AND INSTRUCTION IN THE
FUNDAMENTAL ELEMENTS OF EDUCATION
WITH OUTLINES AND PAGE REFERENCES
BASED ON

The New Teachers' and Pupils' Cyclopaedia

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Preface

METHOD is of vast importance in the acquisition of knowledge. It is the lubricant that serves to oil the mechanism of the brain. Properly employed, it converts knowledge into channels of wisdom and usefulness.

The possession of an accredited work of reference, such as "The New Teachers' and Pupils' Cyclopaedia," is a valuable holding, but it becomes of the greatest utility only when it is consulted in a methodical way. The present volume contains the guideposts that direct efforts along the line of rational study.

Those who have dedicated their lives to the work of the student and the teacher realize clearly the meaning of Rev. F. S. Browning's beautiful words:

I do not know
Where falls the seed that I have tried to sow
With greatest care;
But I shall know
The meaning of each waiting hour below
Some time, somewhere!

—B. P. H.

Introduction

Principal Features.

ATTENTION is directed to the innumerable suggestive and helpful features of this work. It covers the field of education so completely that many prominent educators recommend it as an indispensable help to students and teachers. Hundreds of institutions of learning have placed it on their lists of useful books.

Orthography and Orthoepy.

Correct spelling and pronunciation are accomplishments of the finished scholar. Acquired as habits in the formative period, they give surety and independence to the man or woman in writing and speaking. This work uses the correct method, the system of diacritical marking, and defines and explains the difficult titles.

Language and Grammar.

Children should be taught to speak and write correctly. If properly trained in youth, they acquire the use of language from habit and become able to use it authoritatively. This work gives the exercises and outlines the lessons which are important. With the language lessons are correlated the more advanced work of grammar.

Agriculture.

All the departments of agriculture are treated in a helpful manner. The aim in this branch is to emphasize the importance of the farm in the economy of the nation. Formerly farming was empirical, but now the successful farmer is more especially fitted for the duties of his business. He studies not only to make his work profitable, but endeavors to beautify his home and enjoy the greater conveniences of a progressive age.

Literature.

This work abounds with facts that lead to a hearty appreciation of the best in literature. It contains not only a line of helpful information on the lives of the world's best writers, but furnishes materials for the actual scrutiny of their products. Many quotations from great authors embellish the pages and add interest in the study of useful subjects.

Biography.

Children gain much strength of character from studying the achievements of great men and women. They learn to emulate the noble deeds of great minds, whether in the field of science or statesmanship, and profit by the effort. This work stands foremost in the study and application of noted examples of human life and achievement.

Civics and History.

Instructors in the home and in school should keep in mind the future citizen—the men and women who will ultimately guide the ship of state safely on the sea of nations. THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA treats of civil government so completely that all who follow the instruction obtain a clear understanding of the government, local as well as national.

The scope of work in history ranges from the most ancient to the present time, covering a period of more than six thousand years. It traces the causes and effects largely by sources, making the whole subject both clear and interesting.

Fine Arts.

The fine arts embrace the greatest achievements of man. Architecture, painting, sculpture, music, and engraving stand at the head of human attainments. They engage not only the ingenuity and stimulate the higher nature, but embody the accomplishments that really make life beautiful and ennobling.

This work furnishes the outlines and materials to study the fine arts. Students who follow the courses and consult the references, who devote their spare time to personal culture, acquire ability in conversing on these interesting topics.

Drawing.

The art of drawing is recognized as a very worthy subject of study. It enables the student to enforce statements by actual examples. This work contains a very complete treatise and many instructions in drawing, prepared by Miss Effie Schuneman, an accomplished teacher of the Pratt System of drawing. The mere mention of this system is sufficient to recommend this work to the student and teacher.

Letter Writing.

Correct form and usage in letter writing are as essential as correctness in speaking. Great letter writers, such as Jonathan Swift, Johann Goethe, and Madame de Staël-Holstein, became famous for their style of writing, as well as for the thoughts they committed to paper. This work presents a very complete set of forms and directions for conducting correspondence. Linked with the information given in the work, this department enables the student to be correct in the subjects of knowledge as well as in the style of committing them on paper.

Nature Study.

The systematic study of nature is made possible by consulting this work. It enables students to plan with the view of getting the best information which nature furnishes. Correlated with the topics of study, of which there are innumerable, will be found the choicest gems of literature to ennoble the mind. The fact that this work is consulted more frequently than any other, particularly in nature study, is proof conclusive that it is indispensable to the learner and the teacher.

Sciences.

All the natural sciences, including their branches and departments, are treated in THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA. Outlines in the most important of these branches are furnished in this work, such as those in Anthropology, Astronomy, Botany, Geology, Physics, Physiology, etc.

Other Subjects of Study.

To summarize the entire work, it may be said to contain all the leading subjects for conversation. It embodies the topics which are essential in a practical education and in the affairs of a successful business career.

Those who wish to be abreast of the times, equipped at any moment to demonstrate their power as students and thinkers, may consult this work with confidence of success. In politics and business, in folklore and mythology, in law and commerce, in fact, in all the general topics, it widens culture and disseminates knowledge.

The Attainment of Success

SUCCESS in any enterprise or industry is the product of labor. It must be sawed out of the forest, blasted out of the mine, plowed out of the field, achieved by close application in the institution of learning.

Alexander Hamilton, the eminent American statesman, said: "Men give me credit for genius; but all the genius I have lies in this: When I have a subject on hand I study it profoundly. The effect I make, they call the fruit of genius; it is, however, the fruit of labor and thought."

We need to prepare ourselves to endure physical toil as well as brain activity. This twofold culture, when closely associated with tact to apply it skillfully, is an ever-important factor. Indeed, labor, thought, and skill are the essentials of a successful career.

Nothing can hinder young men and women from obtaining success, if they are ablaze with determination. Those whose early training has been neglected may repair the defect by earnest study at home or in evening schools. If the time for this work is limited, that little should be improved. Napoleon once said, "The reason I beat the Austrian army is, they did not know the value of five minutes."

Success implies more than broad acres, large herds, and heavily laden granaries. It is closely linked with the kindnesses shown to others, the good accomplished in our community, and the help we bestow upon our fellows. Success means enterprise, thrift, skill, kindness, and self-denial.

It is the very nature of man to be athirst. This instinctive characteristic marks the soul as infinite. He may be athirst for work, love, art, achievement, or any other worthy object, but it is a thirst that cannot be quenched by any one or all of them. The desire is gratified only by the hope of future attainment.

> Miss not the occasion; by the forelock take
>   That subtile power, the never-halting time,
> Lest a mere moment's putting off should make
>   Mischance almost as heavy as a crime.
>
> —*Wordsworth.*

The Spirit of Inquiry

THE immortal spirit of inquiry—the basis of every addition to knowledge—cannot die. It is as irresistible as the onward flow of the tides, or the movement of the stars.

The spirit of inquiry and investigation in all ages has dared to explore the wilds of untrodden lands. It has invaded the region of unknown seas, penetrated the crust of the earth and the milky heavens above, and planted imperishable monuments as the result of constant search for knowledge.

Seizing the power and speed of steam, it has moved the commerce of the world. It has bridled the lightning and commanded it to bear messages from land to land. It has discovered the secrets which enable man to fly through the air with the precision and the speed of birds. The conquests of this spirit have kindled the fire of intelligence which will burn for ages and centuries.

To think and investigate are now considered among the greatest glories of life. He who ascends highest the mountain steeps of thought, or plunges deepest into the ocean of unsolved doubt, is considered a benefactor of mankind. The intellect of the thinker, daring to seize the bolts of thought, is not impaled by a tyrannical Jupiter.

Every phase of human economy has been investigated by the spirit of inquiry. This spirit is at the bottom of every progressive movement and is emblazoned on every landmark of civilization.

It has supplanted doubt, uncertainty, and superstition by promoting truth, knowledge, and progress. The influence of this spirit has trained the statesman, guided the schoolmaster, and educated the masses.

The spirit of inquiry should be made a subject of personal study. Our ability to learn and understand should be limited only by our power to acquire a greater fund of knowledge and skill. To be and to become—this is the tonic which should quicken the soul each new morning, the sparkling dew which should refresh the feet of those who tread the grassy sward.

EDUCATION

EDUCATION is the birthright of every child. It is the duty of those in authority to protect the child in the enjoyment of this right. The kind and extent of education are primarily to be decided by the parent, or guardian, but later the youth may choose additional training for a particular trade or profession.

The test of education is not outward prosperity, the enlargement of man's dominion over nature, or the increase of commercial intercourse. These are laudable, if they add to the storehouse of human purpose, or extend the scope of permanent happiness among men. The true test of education is in the influence it has upon the minds and hearts of the people.

The first step in education is to ascertain the present state of mind development. Having learned the capacity of the mind, the instructor begins to teach new elements of knowledge. Step by step the learner is led to associate the new facts with those previously known, both of which are called into use from time to time by tests and examinations.

Successive tests may prove that the learner is making progress in learning the branches studied, but this is a small part of the actual accomplishment. The overshadowing importance of educational work is in the student himself, whose power of mind and body is enlarged and vitalized. A beneficent contagion drives the impulse of mental activity from one faculty to another—from the vision to the memory, from the memory to the imagination, from the imagination to the affections, and from the affections to the will—until the whole being is awakened. The thrill passes from the first point of contact to all the faculties, causing the remotest part of the soul to feel the impulse.

In education the environment of the child must not be overlooked as a potent factor. The mind is influenced, not only by the course of lessons, but by the conditions under which the instruction is given. The home life, the surroundings in the schoolroom, the companions on the playground, in fact, all the things heard and seen, have a vitalizing or depressing influence in the process of development. Frequently influences of which we are not conscious wield the greater force upon the mind and life of the learner.

Education, aside from the subject taught, exercises an influence upon character, A student who is trained to mental and physical labor absorbs cardinal virtues in addition to the elements of knowledge. He acquires habits of self-control, industry, and perseverance. The assignment of lessons causes him to accustom himself to other impulses than present inclinations. Eventually, through persistent work and study, he acquires ennobling habits and sturdy strength.

The scholar himself is the grandest type of perfection in education. He becomes enlarged, strengthened, and improved by the mental struggle through a decade or more of years. If facts are forgotten, they may be recalled by a trained mind in a systematic order when they are needed in actual service. The facts may even be lost, but a more important factor remains, the trained mind that gathers and vitalizes them

Huxley, the English writer, gives the following definition of a liberal education: "That man, I think, has a liberal education who has been so trained in his youth that his body is the ready servant of his will and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose intellect is a clear, cold logic-engine, with all its parts of equal strength and in smooth working order, ready like a steam engine to be turned to any kind of work and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with a knowledge of the great and fundamental truths of nature and the laws of her operations; one who is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of art or nature, to hate all vileness, and to respect others as himself."

The student is not inclined to measure life by years or decades, but rather by the wholesome culture of the mind. This culture brings an enlargement of power, a greater capacity to discharge the functions of life, and makes it possible for the mind to range in a more expanded field. Although such mental development enlarges the duties and responsibilities, it greatly multiplies the joy of living as well as the hopes and ambitions for future years.

Delightful task! to rear the tender thought,
To teach the young idea how to shoot,
To pour the fresh instruction o'er the mind,
To breathe the enliv'ning spirit, and to fix
The generous purpose in the glowing breast.
—*Thomson.*

The Student.

His years, 'tis true, are few,—his life is long;
For he has gathered many a precious gem;
Enraptured, he has dwelt where master minds
Have poured their own deep musings, and his heart
Has glowed with love of Him who framed us thus,
Who placed within this worthless tegument
The spark of pure divinity which shines
With light unceasing.

Yes his life is long.—
Long to the dull and loathsome epicure's,—
Long to the slothful man's,—the groveling herds,
Who scarcely know they have a soul within,—
Long to those who, creeping on to death,
Meet in the grave, the earthworm's banquet hall,
And leave behind no monument for good.
—*Select.*

How We Live.

We live in deeds, not years;
In thoughts, not breaths;
In feelings, not in figures on the dial;
We should not count time by heart-throbs.
He most lives
Who thinks most, feels the noblest, acts the best.
—*Bailey.*

How to Study

The firefly only shines when on the wing;
So with the mind; when once we rest, we darken.
—*Bailey*.

THE object of study is twofold—to acquire knowledge and to cultivate the mind. Many people regard the former of greater importance, since they consider the acquisition of facts and of knowledge the prime end to be kept in mind. It is needless to say that this view is erroneous.

The real object of study is to secure the harmonious and healthful growth of all the faculties. To train the muscles, the mind, and the heart until they respond quickly and unfalteringly to the higher impulses should be the chief ambition of the student. Facts without a trained mind to use them are absolutely useless and unfruitful.

The student should aim to acquire correct and vigorous habits of thinking. The thinking should be deep, concise, and clear. He should be able to express thought by voice and pen in an unfaltering manner. Trained in this way, the mind becomes the master of facts and uses them with the force that begets influence.

METHOD. Begin to study from facts already known and thence proceed to the unknown. The explorer of an unknown region ascertains a complete description or record of the starting point, provides himself with the necessary instruments and provisions to endure the voyage, and proceeds with the greatest caution into the untrodden field. In a similar manner, the student must equip himself with the instruments of study, such as text-books and works of reference, and proceed from his state of mind development to the higher realm of mental activity. If he plunges recklessly into unexplored fields, entirely disconnected from his previous attainments, he hazards the danger of being lost in the floes of the frozen seas, or devoured by beasts in the malarial jungle.

PRINCIPLES. The mind develops only under favorable conditions, when it is in a suitable attitude to concentrate its powers upon the subject under consideration. Mental culture is not creative in its nature, hence the aim is to develop realities only from the possibilities possessed by the mind. From these principles, the following rules may be deduced:

1. Take ample healthful exercise to stimulate the circulation and develop the physical powers Plan to have sufficient sleep so the mind will be clear for work during the entire period for study.

2. Do not plod and ponder. It is better to rest when you get tired than to try

to study when the mind is dull or overtaxed. The mind becomes dull when the body is tired. At this point it may be well to take up another subject. A change in the branch of study often is restful and tends to revive interest.

3. The student must cultivate an interest in the subject which he studies. Interest stimulates the attention and induces the mind to grasp for more information. Games and amusements are enjoyed because they are interesting. The same interest, the desire to master the subject, is essential to study with success.

4. Interest is stimulated by an understanding of the lessons. It is a mistake to try to teach what is beyond the comprehension of the learner. Any knowledge secured in an isolated and disconnected way is of little value in the general process of education. The spelling of words and the meaning of terms and phrases should be mastered and affiliated with facts previously learned.

5. We should study to acquire *power*. Frequently we find those who know *how*, but they lack the *power to do*. These two elements must be combined by judicious training. The power sought should enable us to think consecutively, to utilize judiciously, and to control and direct our mental and morai forces. In every act of the body and mind we expend energy. This energy is the life element, the vital force, which enables us to achieve success and obtain happiness.

6. We should not study merely to *get the answer*, but rather to *understand* the topic in all its relations. Strength is gathered by mental exercise, by acquiring and applying the new knowledge. The effort in learning should be compared to the exercise of the athlete instead of the work of the haymaker. Rather than aim at the *product*, we aim at the healthful, intelligent *effort* put forth.

7. The student needs to acquire habits of thoroughness. He should go to the bottom of the problem and master the cause and effect. Thoroughness does not imply reading all that may be said on a topic, but rather to read each sentence carefully, thoughtfully, and understandingly. Our work is thorough when we are able to explain the reason for each step as we proceed.

8. The student should apply the knowledge as it is learned from time to time. This should be done with tact, else he may become offensive to his companions. Such use of the new elements of knowledge causes him to employ the correct form from force of habit.

Those who know how to speak correctly, in a fluent and grammatical order, do themselves an injury when they fail to employ the best forms of which they are capable. The force of habit in using incorrect forms, both in thought and speech, is so strong that even the trained mind needs to guard against it with care.

9. We should study to acquire nobility of mind and heart. Every act may be likened to stone and mortar in the formation of character. Without character the most splendid attainments are as the house built upon the sand. With it deeds become the guardian angels of this mortal life.

10. If you have leisure hours, as most students have, plan to spend them wisely. Great men, men of affairs, have no hours of leisure, because they allot their time so it will count for something—either for business or for recuperation. It is important to utilize time wisely in this way, making it of utility in study, in rest, or in healthful exercise.

Our doubts are traitors
And make us lose the good we oft might win
By fearing to attempt. —*Shakespeare.*

Needs of Man

Food
Clothing Shelter
Heat
Education

Those who think must govern those who toil.—*Goldsmith.*

THE needs of man are varied and numerous. Simplest in the early period, they increase in number and complexity as man progresses upward in the scale of civilization.

Primitive man considered few wants and was easily satisfied. He lived close to nature and depended largely upon himself for food and shelter. The complexity of human interdependence was not recognized until long after intelligence had been placed above physical strength.

Every discovery and invention has added to the requirements of man in the home, in society, and in public life. It is now considered that he lives most who acts the noblest and thinks the best.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA is of importance to those who feel the need of a work of general reference. It was prepared and edited by a corps of writers who had in mind the requirements of mankind along the line of practical information. Consult the articles on AGRICULTURE, ARCHITECTURE, CIVILIZATION, COMMERCE, FOOD, HYGIENE, PLANTS, SCHOOLS, WEAVING, etc.

Outline.

I. FOOD.
  1. Vegetable.
    1. Where found.
    2. How obtained.
      Farming.
      Gardening (Market).
    3. Kinds.
      1. Fruit.
      2. Grain.
      3. Vegetables.
    4. Occupations growing from this.
      1. Farming.
      2. Gardening.
      3. Trade.
        Wholesale—Commission houses.
        Retail—Grocery stores, bakeries, etc.
      4. Transportation.
      5. Commerce.
  2. Animal.
    1. Where found.
    2. How obtained.
      1. Hunting.
      2. Fishing.
      3. Trapping.
      4. Stock raising.
      5. Trade.
        1. Wholesale—Packing houses.
        2. Retail—Butchers
    3. Kinds.
      1. Poultry.
      2. Pork.
      3. Beef, Veal.
      4. Mutton, Lamb.
      5. Fish, Oysters.
      6. Dairy products.
    4. Occupations.
      1. Trade.
        1. Wholesale—
          1. Packing houses.

2. Commission houses.
2. Retail—
1 Butchers.
3. Mineral.
Iron.
Lime.
Salt.
Water.
Soda.
Magnesium.

II. CLOTHING.
1. Where found—Trade centers, zones.
2. How obtained.
1. Manufactured.
3. Kinds.
1. Vegetable.
1. Cotton.
2. Flax.
3. Hemp.
4. Rubber.
2. Animal.
1. Silk.
2. Leather.
3. Wool.
4. Furs.
5. Feathers, boas.
6. Hair.
3. Mineral.
1. Glass.
2. Steel or Iron (Coat of mail, armor).

III. SHELTER.
1. Kinds.
1. Stone.
1. Kinds.
1. Building stone.
2. Granite.
3. Marble.
2. Where found—Quarries.
3. How obtained.
4. Occupation—Stone cutting.
2. Wood.
1. Kinds.
1. Oak.
2. Pine.
2. Where found.
1. Forests.
3. How obtained.
4. Occupation—Lumbering.
3. Brick.
1. Kinds.
2. Where found.
3. How obtained.

IV. HEAT.
1. Materials.
1. Coal.
2. Oil.
3. Gas.
4. Wood.
Where found.
How obtained.

V. EDUCATION.
1. Need of—
Physical.
Intellectual.
Moral.
2. Public and private.
3. Classes of schools.
1. Kindergarten.
2. Elementary.
3. Academical.
4. Technical and professional.
5. The University.

THE BUILDERS

All are architects of Fate,
Working in these walls of time;
Some with massive deeds and great,
Some with ornaments of rhyme.

Nothing useless is, or low;
Each thing in its place is best;
And what seems but idle show
Strengthens and supports the rest.

For the structures that we raise,
Time is with materials filled;
Our to-days and yesterdays
Are the blocks with which we build.

—Longfellow.

Nature Study

There is a pleasure in the pathless woods,
There is a rapture on the lonely shore;
There is society where none intrudes,
By the deep sea, and music in its roar.
—*Byron.*

DEFINITION: Nature Study embraces a study of the objects in nature, such as animals, minerals, and plants.

The period of childhood is the most fruitful time to cultivate the emotions and to build up the positive side of character. It is primarily the formative period, when the eyes are filled with pictures and the fancies spring as buds of the realities which a happy maturity of years may bring.

Nature furnishes the inspirations which are really worth while. It enables the author to write with tenderness and trueness to life; it teaches the painter to reduce to the canvas what we call the delicate and the beautiful in art. But to the student, especially in childhood, nature does even more, since it awakens the love and interest in the beauty and realities which are encountered everywhere in the universe.

Plants are the simplest and most common objects with which we come in contact and are well adapted for use in the early lessons. Where certain plants grow, how they are constructed, and in what order the several parts develop are interesting topics. Attention may be directed to the grouping of plants, or, in other words, to classification. Both botany and zoölogy furnish large fields for observation and study, but the processes in the latter are somewhat complicated. Therefore, the study of plants should precede the study of animals. From these the student may proceed to geography, the elements of physics and chemistry, the study of minerals, and ultimately to physiology.

If the teacher hopes to guide her pupils wisely, she must herself go to nature for inspiration. It is necessary for her to learn to know and love the flowers, the birds, and the trees in order to induce her students to observe their habits of growth and the functions they serve in nature. Each object which is studied should be sketched and made the topic for a written lesson, after which all the statements should be verified by reference to the text-books and the cyclopaedia. Practice work in drawing and composition, conversational lessons, and the study of selections from literature are earnestly commended.

N A T U R E

***

Nature speaks in language olden,
  Speaks in tones that all may hear;
Tells of ages that were golden,
  Tells of storm-nights dark and drear.

She has secrets in her keeping,
  Secrets hid from you and me,
They have been for ages sleeping,
  Stored in earth and air and sea.

In the streamlets you will hear them,
  As they ripple o'er the stone,
In the forests you are near them,
  Near them in the desert, lone.

Hear them in the tempest raging;
  Hear them in the summer breeze;
See them in the season's ageing;
  See them in the spreading trees.

Every flower, it has its story;
  Every stone its tale to tell;
Legends tint the sunset glory,
  History moulds the mollusk's shell.

— I. Noble.

-SA-

TYPEWRITER LESSON.

Objects to be Attained.

1. To increase the power of observation in children.
2. To awaken and enlist the interest of the children in their immediate environment.
3. To give practical information about the common things of life.
4. To prepare children to appreciate the literature which nature has inspired.
5. To develop the higher nature of the human being—the spiritual, the aesthetical, and the ethical.

Outlines in Nature Study.

I. Fall Term.

A—The common flowers, fruits, grasses, weeds, leaves, trees, etc.

1. Collect specimens and bring to schoolroom for study (Where possible, children should make the collection).
2. Make study of each specimen as to color, size, form, where found, how grown, short description, use, etc.
3. Represent each in color work in drawing (The best drawings at the time to be collected and preserved).
4. Collect pictures of these things and classify for study.

B—The more common insects and worms.

1. Covering, color, size, form, habits, and use (Specimens to be collected, brought into the schoolroom, studied, and preserved for future use).
2. Collect and classify pictures for study.
3. Represent in color drawings (Preserve the best).

C—Domestic and common wild animals.

1. Covering, color, size, habits, and use (Children to make observations and tell what they observe).
2. Collect and classify pictures for study.
3. Represent in color drawings (Preserve the best).

D—Domestic fowls and birds.

1. Teach something of color, size, habits, dress, and use of each (Children to be given an opportunity to make observations about these fowls and birds).
2. Collect and classify pictures for study (Where possible to get a stuffed specimen, do so).
3. Represent in color drawing, as far as possible, a picture of each (Preserve the best).

E—Observations on the weather

1. Clear and cloudy days.
2. Calm and windy days.
3. Warm and cold days.
4. Rainy days.
5. Make chart indicating simplest observations and preserve it.
6. As far as possible, collect pictures.
7. Represent in color drawings little scenes showing sunshine, clouds, etc.

F—Observations on the surface of the earth and simple directions and distance taught.

1. Hill, hollow, brooklet, stream.
2. Represent these in drawings.
3. North, south, east, and west.
4. Far and near, etc.

G—Literature and language.

1. Memory gems and poems about nature.
2. These to be selected and suited to the topic under consideration and taught at the time.
3. Story of Hiawatha.
4. Other stories, as "Little Red Riding Hood," "The Three Bears," etc. (These to be acted and played).

H—Finally, as a fitting close for the fall work, the idea of the ingathering of the harvests, as represented in the Thanksgiving Celebration, etc. The Evening of Life.

II. Winter Term.

A—Preparation of different things for winter.

1. Flowers, grasses, weeds, trees, etc., closing of the buds, changes in the grass, weeds, trees. Why?
2. Insects; change. What becomes of them?
3. Fowls and birds, change. Migration of birds.
4. Animals change in covering. Why?
5. Continue observations on weather—Snow, ice, cold, frost, and fire.
6. Winter scenes represented in drawings.
7. Pictures collected and classified.
8. Children's sports and games
9. Memory gems and poems suited through the season.
10. Continue the study of stories, acted and played. The idea here represented is that all nature goes to sleep. It is the Nighttime of Life.

III. Spring Term.

A—Preparation for spring.

1. Opening of the buds (Get the earliest buds and twigs for study).
2. The springing up of the grass and weeds.
3. The leafing of the trees.
4. The flowering of the plants.
5. The coming of the birds and insects.
6. Change in the animals—Shedding of their winter covering, etc.
7. Change of fowls.
8. Memory gems and poems suitable to the season and the lesson.
9. Stories acted and played.
10. Pictures collected and classified. The idea here represented is the awakening of all nature. The Morning of Life.

Correlated Subjects.

ANIMALS.

Birds—Condor, carrier pigeon, dove, jay, lark, robin, stork.
Domestic—Camel, cat, cattle, dog, elephant, horse, swine.
Extinct—Archaeopteryx, mammoth, mastodon, megatherium, pterodactyl.
Fabled—Chimaera, dragon, griffin, mermaid, phoenix.
Fowls—Duck, goose, guinea, pigeon, poultry, turkey.
Insects—Ant, beetle, butterfly, flea, fly, gnat, mosquito.
Miscellaneous—Dodo, chameleon, frog, monkey, prairie dog.

MINERALS.

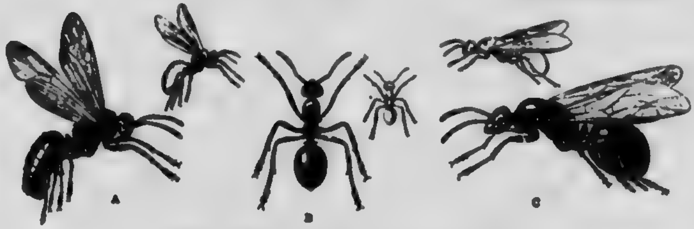
Aluminum—Discovery, utility, process of making.
Coal—Anthracite, bituminous, canal, lignite, coke; uses of.
Cobalt—Commercial uses, where mined (Canada has the largest output).
Copper—History of, where found, quantity produced, uses of.
Gold—Mining, uses of, quartz, gold beating.
Iron—History of, where found, uses of.
Lead—Production of, uses, value in the arts.
Related Topics—Amalgam, assaying, blast furnace.
Silver—Where mined, uses, smelting, quantity produced.

PLANTS.

Cereals—Barley, corn, kafir corn, oats, rye, spelt, wheat.
Flowers—Carnation, dahlia, geranium, hollyhock, phlox, sunflower.
Fungi—Lichens, mushrooms, rust, smut, toadstool.
Fibers—Cotton, esparto, flax, hemp, jute, ramie.
Forest Trees—Ash, elm, mahogany, oak, pine, rosewood.
Fruit—Almond, apple, breadfruit, lemon, orange, palm, quince.
Miscellaneous—Bamboo, coffee, tea, seeds, tobacco, weeds.
Vegetables—Bean, cabbage, lettuce, onion, pea, potato.

Ant.

I. **HYMENOPTERA (Two winged).**
II. DESCRIPTION.
  1. Wings—Four membraneous.
  2. Head—Triangular.
  3. Mouth parts—Arranged for biting or sucking.
  4. Antennae—Slender.
  5. Eyes—Two kinds.
    A. Compound, consisting of fauces.
    B. Ocelli (Little eyes).
  6. Sense of smell—Very acute.
III. KINDS.
  1. Queen (Winged).
    A. Size—Much larger than males.
    B. Duty—To deposit eggs which are scattered anywhere in the nest.
  2. Males (Winged).
    A. Size—Smaller than female.
    B. Use—To fertilize eggs.
    C. Death—Soon after pairing season.
  3. Workers (Wingless).
    A. Size—Smallest of class.
    B. Intelligence—Greatest and most interesting.
    C. Duties—
      a. To build home and streets.
      b. To care for eggs.
      c. To feed the larvae.
      d. To care for pupae.
      e. Acquisition of food.
      f. To act as soldiers.
      g. To keep habitation in repair.



RED ANT (Magnified and Natural Size).
A. Male; B. Worker; C. Female.

IV. METAMORPHOSIS.
  1. Eggs—(Very small).
    A. Deposited by queen.
    B. Carried by workers and placed in sun in morning and at night stored in nest.
  2. Larvae—Small, white worms.
    A. Carried back and forth by workers same as eggs.
    B. Nourished by liquid from stomach of workers.
    C. Spinning of cocoon.
  3. Cocoon—
    A. Cared for in same way as eggs and larvae.
    B. Cut out of cells by workers when ready to become perfect ants.
V. HABITS AND CONSTRUCTION OF HOMES.
  1. Homes—
    A. Ant-hills—Built in ground and cones, or hills, constructed over them.
      a. Rooms and galleries—Many.
      b. Height—In tropics from 12 to 18 feet.

    - B. Others construct pillars with extended arches, covered with loose straw and sticks.
    - C. Mining ants—Construct long galleries in clay.
    - D. Carpenter ants—Build their homes in trees.
    - E. Houses of leaves—Constructed by species in Australasia.

VI. FOOD—

- 1. Sugar—Obtained from vegetables.
- 2. Honeydew—Sugar fluid found in the aphis (an insect).
- 3. Animal food—Valuable in clearing away carrion.
- 4. In tropical region, some species prey upon living animals.
    - A. Others kill birds, reptiles, etc., by attacking in swarms.
- 5. Characteristics.
    - A. Intelligence—Almost beyond belief.
    - B. Wonderful ingenuity in carpentry, masonry, and mining.
    - C. Sensitive of changes of temperature and moisture.
    - D. Sound—Exceed human ability in detecting sound waves.
    - E. Dead—Removed promptly and buried.
    - F. Sign language.

VII. KINDS.

- 1. Common red ant.
- 2. Black ant.
- 3. Umbrella, or parasol, ant—So-called from habit of carrying leaves on its back.
- 4. Honey ant—Secretes and stores honey in abdomen.
- 5. White ants—(Not true ants).

Test Questions on the Ant.

What classes of ants have wings? 108.

Which are the most intelligent?

Which perform the work of the munity? 108.

Where do ants live and how many a colony or community?

Which ants are the largest? Which the smallest? Which the most num ?

How large are the eggs of ants and where are they deposited?

Give two ways in which a worker may be distinguished from a male or female ant.

Tell how the eggs are taken care of and hatched.

Tell how the larvae are fed and cared for by the workers.

What can you say about the wonderful intelligence of ants in building houses? In mining? In carpentry work?

In what countries are ant-hills found which are from twelve to eighteen feet high?

What kind of ants live in growing trees?

In what countries are ants found that glue leaves together with which to build their houses?

Do ants have a language to communicate with each other?

Are they sensitive to sound and changes in temperature?

In what country are they used for food and how are they prepared?

How does the ant milk the aphis?

Do some ants eat animal matter?

What species of ants live principally upon wood?

How do white ants, or termites, differ from common ants?

How many eggs will a single ant lay?

In what island was there a remarkable scourge of ants about 1780 and how were they destroyed?

Name three of their principal enemies.

What species of ants are very dangerous pests?

What can you say of the ants' love for sugar?

When does their second birth take place?

Give all the points you can about the similarity of ants and bees.

Apple.

I. **Family.**

II. **Description.**

1. Tree.
    - A. Height—Moderate, seldom exceeding 30 ft.
    - B. Branches—Spreading.
    - C. Leaves—Oval.
    - D. Flowers—Pinkish white, produced from very short shoots.
    - E. Fruit.
        - a. Pulp—Hard and juicy, formed around a core which has five cells.
            - (a) Cells (Contain 2 to 3 seeds).
        - b. Color—Various—Limited to shades of red, green, and yellow.
        - c. Shape—Round or elongated.

FLOWER.

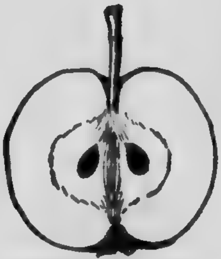
III. Classes.

1. From where derived.
    - A. Wild crab.
2. How improved.
    - A. By ingrafting.
    - B. Naturalization.
3. General classes.
    - A. Summer.
    - B. Autumn.
    - C. Winter.
        - a. Varieties of classes (Many thousand).
            - (a) Wine Saps.
            - (b) Danvers Winter Sweet.
            - (c) Pippins; Ben Davis.
            - (d) Willow Twigs.
            - (e) Duchess of Oldenburg.
            - (f) Hundred of others.
4. Seedless apple.
    - A. Propagation—Evolved by propagation at Grand Junction, Colo.
    - B. Characteristics.
        - a. Seedless.
        - b. Coreless.
        - c. Wormless.
        - d. Flower—Missing.
        - e. Meat—Quite solid, of good flavor, and keeps well.

FRUIT.

IV. Uses.

1. Cooking.
    - A. Canning.
    - B. Baking.
    - C. Preserving.
    - D. Jelly.
2. Cider.
3. Medicinal compounds.



SECTION OF APPLE.

V. Where Found.

1. Native—Temperate regions of Asia and Europe.
2. Introduced into America by Puritans.
3. Cultivated where—Southern Canada, Middle Atlantic states, Mississippi Valley, and Pacific coast.

VI. PROPAGATION.
  1. New varieties—How obtained.
    A. By seeds.
    B. Mostly by grafting.
  2. Orchard.
    A. Ground—Should be carefully prepared.
    B. Distance of trees—Best results obtained about 30 ft.
    C. Good crop—How obtained.
      a. Land should be tilled until about middle of July.
      b. Hence, sown with clover or cowpeas.
    D. Number of trees in United States (200,000,000).
    E. Yearly crop about 100,000,000 barrels.

The Apple.

Doth thy heart stir within thee at the sight
Of orchard blossoms upon the mossy boughs?
Doth their sweet household smile waft back and glow
Of childhood's morn—the wondering fresh delight
In earth's new coloring, then all strangely bright,
A joy of fairyland?

An apple orchard is sure to bear you several crops beside the apple. There is the crop of sweet and tender reminiscences, dating from childhood and spanning the seasons from May to October, and making the orchard a sort of outlying part of the household. You have played there as a child, mused as a youth or lover, strolled there as a thoughtful, sad-eyed man. Your father, perhaps, planted the trees, or reared them from the seed, and you yourself have pruned and grafted them, and worked among them, till every separate tree has a peculiar history and meaning in your mind. Then there is the never-failing crop of birds,—robins, goldfinches, king-birds, cedar-birds, hair-birds, orioles, starlings,—all nesting and breeding in its branches and fitly described by Wilson Flagg as "Birds of the Garden and Orchard."—John Burroughs.

Come Let Us Plant the Apple Tree.

  Cleave the tough greensward with the spade;
Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mold with kindly care,
  And press it o'er them tenderly—
As, round the sleeping infant's feet,
We softly fold the cradle-sheet;
  So plant we the apple tree.

  What plant we in this apple tree?
Buds, which the breath of summer days
Shall lengthen into leafy sprays;
Boughs where the thrush with crimson breast,
Shall haunt and sing and hide her nest;
  We plant upon the sunny lea,
A shadow for the noontide hour,
A shelter from the summer shower,
  When we plant the apple tree.

  What plant we in this apple tree?
Sweets for a hundred flowery springs
To load the May wind's restless wings,
When from the orchard row he pours
Its fragrance through our open doors;
  A world of blossoms for the bee,
Flowers for the sick girl's silent room,
For the glad infant sprigs of bloom,
  We plant with the apple tree.

  What plant we in this apple tree?
Fruits that shall swell in sunny June,
And redden in the August noon,
And drop, when gentle airs come by,
That fan the blue September sky,
  While children come, with cries of glee,
And seek them where the fragrant grass
Betrays their beds to those who pass,
  At the foot of the apple tree.

—*William Cullen Bryant*

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apple tree?
Buds, which the breath
of summer days
Shall lengthen into leafy
sprays;
Boughs where the
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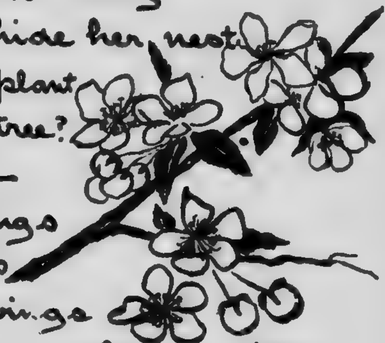

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While children come with
cries of glee,
And seek them where
the fragrant grass
Betrays their bed
to those who pass,
At the foot of the apple tree.

William Cullen Bryant.

BLACKBOARD LESSON.

Test Questions on the Apple.

To what family of plants does the apple tree belong? 120.

Of what continent is it a native?

What can you say of its antiquity?

From what country was the apple introduced into America?

What is the parent apple of all the varieties grown and of what country is it a native?

Describe the wood of the apple tree and tell for what purposes it is used.

What is the height of the apple tree? 120.

Name five winter varieties common to Illinois. Name three summer varieties. 1175.

Give four different ways of grafting trees.

What is the object of grafting?

What is bud grafting?

What materials are used in grafting?

What kind of plants are budded? 396.

Describe the apple tree borer. 121.

Give three preventives.

What other fruit tree does it attack?

What can you say as to crab and sour apple vinegar compared to that made from wine, as to quality and flavor? 3051.

What is added to the cider to improve the flavor? At what temperature does cider ferment very rapidly? 3050.

How is cider brandy, or apple jack, made? 581.

Planted thirty feet apart, how many apple trees will an orchard of ten acres contain?

Which would be the more profitable, an apple orchard yielding three bushels of apples per tree at $.40 per bushel (40 acres), or a wheat field of 160 acres producing 25 bushels per acre at $1.00 per bushel (Apple trees set 30 feet apart)?

In what sections of United States are apples cultivated most extensively?

To whom is credit given for propagating the seedless apple? 120.

How many seedless apple trees constituted the world's stock in 1905? 121.

Does the seedless apple tree produce blossoms?

Describe the meat of the seedless apple.

Why is the seedless apple tree less liable to injury by late frost than other varieties?

How is it protected from injury by insects? 121.

What can you say about the size and keeping qualities of the seedless apple?

Has the seedless apple a core and is it wormless?

In Autumn:
"You think I am dead," the apple tree said,
"Because I have never a leaf to show—because I stoop,
And my branches droop, and the dull gray mosses over me grow!
But I'm all alive in trunk and shoot; the buds of next May
I fold away, but I pity the withered grass at my root."
—*Edith Thomas.*

Bee.

QUEEN.

- I. CLASSES.
  - 1. Social.
    - A. Honeybee
    - B. Bumblebee.
  - 2. Solitary Bees.
    - A. Leaf cutting bee.
    - B. Carpenter bee.
    - C. Mason bee.
- II. SPECIES.
  - 1. Honeybee.
    - A. Queen.
      - a. Eggs—Lays from 2,000 to 3,000 daily.
        - a. Size—One-twelfth of an inch long.
        - b. Color—A bluish white.
        - c. Shape—Oblong.
        - d. Period of incubation—Three days.
        - e. Larvae.
          - (1) Color—White.
          - (2) Food—Pollen or beebread.
          - (3) Period of larval stage—Five to six days.
        - f. Pupae.
          - (1) Time—Thirteen days.
          - (2) Envelopment—Cocoon.
        - g. Where deposited.
          - (1) For queens—Ordinary cell enlarged when queens are desired and fed on "royal food."
          - (2) For workers—Ordinary cell.
          - (3) For drones — Larger cell and hatched from unfertilized eggs.
      - b. Size — Longer and more slender than male or worker.
      - c. Age—5 to 30 months.
    - B. Workers.
      - a. Number—From 10,000 to 50,000.
      - b. Nurses—Youngest workers.
        - a. Duties.
          - (1) To feed larvae.
          - (2) Enlarge cells for queen and feed them "royal food" or bee jelly.
          - (3) Make bee jelly for larvae.
          - (4) Time of service (About one week).
      - c. Uses.
        - a. Gather and make honey.
        - b. Protect the hive.
        - c. Comb building.
        - d. Clean out the hive.
        - e. Cross fertilize plants.
        - f. Repair the hive.
        - g. Store beebread.
        - h. Workers kill the drones.
      - d. Habits.
        - a. Flight.
          - (1) Distance—Five miles.
          - (2) Bee line.
        - b. Swarming
          - (1) Frequency (From one to four times a year).
          - (2) Hiving.
        - (3) Old queens. Young queens.
    - c. Honey.
      - a. Where obtained.
        - (1) From pollen of flowers.
        - (2) Honey dew.
        - (3) Sweet juices of plants.
        - (4) Robbing other bee hives.
      - b. How collected.
        - (1) Pollen carried on hair of legs.
        - (2) Sweet juices (Taken up by the trunk in stomach or honey bag).
      - c. Honey cell.
        - (1) Size (Larger than hatching cell).
        - (2) Construction — Horizontal.
        - (3) How filled and sealed.
        - (4) How retained in cell (By capillary attraction).
      - d. Hive—Construction.
        - (1) Frames.

WORKER.

DRONE.

    - (2) Honey comb foundation.
  - c. Honey extractor.
- C. Drones.
  - a. Number—From 500 to 800.
  - b. Why so called—From the low humming sound made in flight.
  - c. Uses.
    - a. To act as royal escorts.
    - b To fertilize the eggs.
- 2. Bumblebee.
- 3. Carpenter Bee.
  - A. Home—In wood.
    - a. How made—By boring in trees.
    - b. Tunnels.
      - a. Rapidity of boring—¼ to ½ inch daily.
      - b. Direction.
        - (1) Against grain, at first.
        - (2) With grain, afterward.
        - (3) Length, one to two feet.
        - (4) How divided, into cells. Cells contain pollen and eggs.
        - (5) Partitions, how made. Powdered dust of wood.

III. **Food.**
- 1. Pollen.
- 2. Sweet juices and honey.
- 3. Beebread (Composition of flower dust mixed with water and honey).

IV. **Weapon of Defense.**
- 1. Sting.

V. **Enemies.**
- 1. Moth millers and birds.
- 2. Toads and mice.
- 3. Lice and flies.

VI. **Language.**
- 1. How expressed. According to Lubbock, "the language of bees is expressed by humming."

VII. Age—Workers.
- 1. Spring bees — Two to three months.
- 2. Fall bees—Six to eight months.
- 3. Old bees.
  - a. How distinguished (Darker color; wings look worn).

VIII. **Death.**
- 1. Wearing out of wings.
- 2. Diseases.
- 3. Loss of sting.
- 4. Other causes.

Questions on the Bee.

Of what sex are worker honeybees? 258.

What becomes of the drones in the fall?

When the egg first hatches, what does the larva look like? What is it fed if a new queen is desired? Note 1.

Why is it difficult to raise red clover where there are no bumblebees? 260.

How is pollen carried? 259.

Does the queen ever leave the hive?

Why is the male bee called the drone?

Is wax gathered or made?

How do bees carry honey to the hive?

What is the shape of a cell? What keeps the honey from running out before it is capped over? 1153.

What is artificial honey?

After the egg is laid, how long before a full grown bee develops?

How many queens live in a swarm?

What is meant by the term *bee line?*

What is a drone-laying queen? Note 3.

From what plant is the finest grade of honey made? Note 4.

How far will a bee go to gather honey? Note 8.

How can you distinguish an old bee from a young one? Note 8.

What causes the natural death of workers and where do they die? Note 8.

Where do injured bees die? Note 8.

Tell how to locate a bee tree. Note 8.

What is beebread? How is it made?

When do mice infest bee hives? Note 7.
Name five enemies of bees. Notes and page 259.
How far may bees be sent through the mails? Note 2.
What is *royal food?* Note 1.
Give the method the bee raiser uses to hatch queens for mercantile purposes.
What can you say about the habit of the kingbird in catching bees? Note 6.

Notes on the Bee.

Queens.

1. Queen bees have stings, but they will not sting a person nor use them for any purpose except to kill other queens. Should a queen die or be taken from the hive when there are eggs in the cells, the workers at once make larger pear-shaped cells, placing them vertically, and supply the larva with *royal food* before capping them over, thus hatching another queen. They generally do this with several cells, thus insuring at least one queen. Bee keepers take advantage of this and, by removing the queen, cause a number of queens to be produced for mercantile purposes. As they hatch, they must be inclosed in a wire screen so they cannot get together, or they will kill each other.

Mailing Bees.

2. Bees may be securely inclosed in a cage or box and transported by mail without injury. They can be sent safely a long distance in this way, but sugar or other food must be inclosed in the box. A queen must never be transported without placing two or three workers with her, as she will starve; she cannot or will not feed herself.

Drone-Laying Queen.

3. Should a queen die and leave no eggs in the cell, the colony will gradually perish. Under these conditions sometimes a worker will become fertilized and lay eggs, which will hatch, but the product is a hybrid and will do nothing but eat. In looks, it is a small-sized drone. Such a worker is called a *drone-laying queen.*

Honey and Fertilization of Clover.

4. White clover makes the finest grade of honey, but the blossoms of the linden tree and buckwheat make large quantities during their season. Honeybees cannot work on mammoth red clover for the reason that the proboscis is not long enough to reach the nectar. It is erroneous to speak of honeybees cross fertilizing red clover. It is the work of the bumblebee or other insects.

Queens and Swarming.

5. About two weeks after bees swarm, if you place your ear against the outside of the old hive, you can hear the queen or queens calling. This is the time to look for the second swarm. After the second swarm, if it swarms the second time, the third swarm will come off, but not later than the third day; the fourth swarm comes out about two days after the third. One queen, in the struggle for supremacy, drives another from the hive and some of the bees follow. This is the cause of swarming, the number of swarms depending on the queens that are driven out. The third and fourth swarms usually are small and undesirable. If bees do not swarm the second time inside of three weeks after the first, they will likely not swarm any more during the season.

Kingbird.

6. The kingbird, or bee martin, is a very common enemy of bees. From the fact that it has a bunch of red feathers on top of its head, the story is current "that it ruffles up these feathers to resemble a beautiful flower and, when a bee comes along to sip honey from the supposed flower, it is snapped up by the bird."

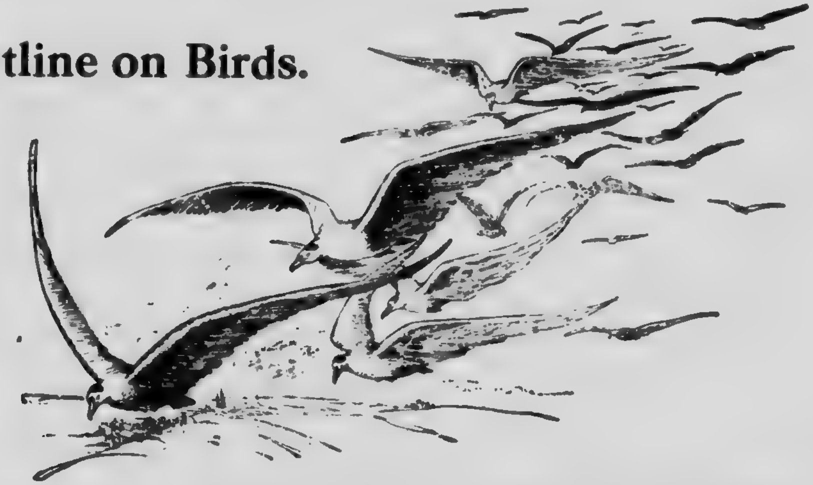
Toads and Mice.

7. If you see a toad sitting innocently on the ground or board close in front of the hive, watch him and if you have a quick eye you will see how he gets his meal. Mice will sometimes infest hives of bees in the winter.

Old Bees, Beebread.

8. A bee tree may be found by placing honey or sugar so bees can find it and where their return flight may be observed. It is said that bees will go five miles to gather honey. Old worker bees may be distinguished by having a darker shade than young bees and the wings being more or less frayed. When the wings wear out they crawl as far away from the hive as possible. If a worker is injured it leaves the hive to die. Pollen mixed with honey and water is stored in quantities for winter use and known as beebread.

Outline on Birds.



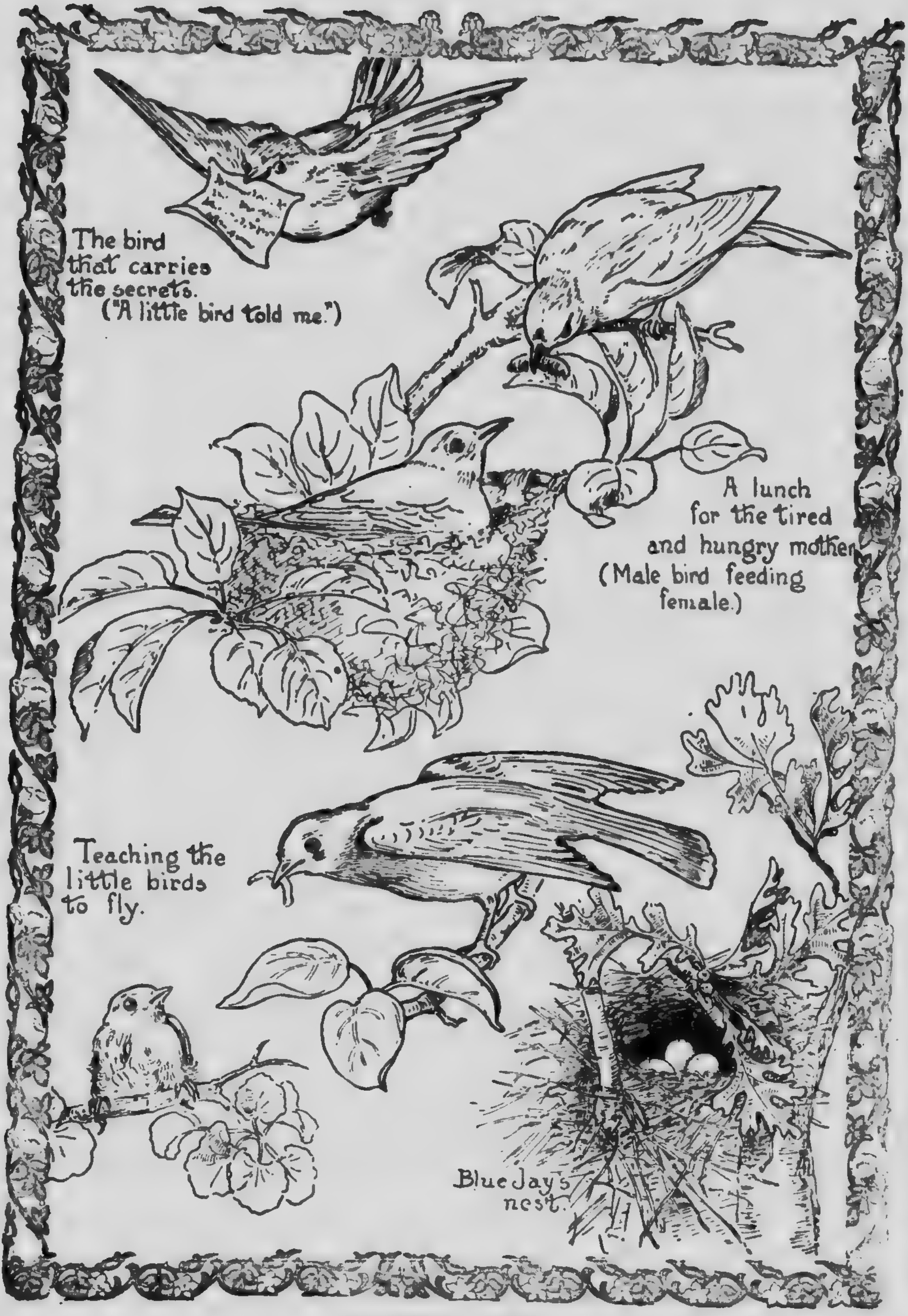
Classification......
1. Climbers (Scansores)—Cockatoo, parrot, woodpecker.
2. Perchers (Insessores)—Canary, goldfinch, robin.
3. Raveners (Raptores)—Eagle, hawk, vulture.
4. Runners (Cursores)—Emu, ostrich, rhea.
5. Scratchers (Rasores)—Fowl, pheasant, pigeon.
6. Swimmers (Natatores)—Duck, goose, gull, swan.
7. Waders (Grallatores)—Crane, heron, snipe, stilt.

Physical Features..
Covering of body.
Bones and skeleton.
Flight.
Sight and hearing.
Touch and taste.
Song or voice.
Economic value.

Topics for Study..
Animal heat and intelligence.
Birds of passage.
Eggs—Size, color, value.
Food—Insects, grain, worms.
Feathers—Plumes and quills.
Fossils—Remains and footprints.
Nativity—Where found.
Nests—Form and materials.

Now the days are full of music!
All the birds are back again;
In the tree-tops, in the meadows,
In the woodlands, on the plain.
See them darting through the sunshine!
Hear them singing loud and clear!
How they love the busy springtime,
Sweetest time of all the year!

—*Katherine Beebe.*



BLACKBOARD LESSON.

Kindness to Animals.

Be kind to dumb creatures, nor grudge them your care,
God gave them their life, and your love they must share,
And He who the sparrow's fall tenderly heeds
Will lovingly look on compassionate deeds.
—*Selected.*

You call them thieves and pillagers; but know
They are the winged wardens of your farms,
Who from the cornfields drive the insidious foe,
And from your harvests keep a hundred harms;
Even the blackest of them all, the crow,
Renders good service as your man-at-arms,
Crushing the beetle in his coat of mail,
And crying havoc on the slug and snail.
—*Longfellow.*

Questions on Birds.

For what three traits is the falcon noted?

What birds are noted for their beautiful plumage?

Name a list of song birds. Which sex of birds is the singer?

What are laughing birds and where are they found?

Which birds are noted for their speedy flight?

Of what country is the bald eagle an emblem? Of what qualities are eagles symbolical? 853.

Why is the condor known as the greedy bird?

Eggs and Nests.

Of what materials do birds build their nests? 298.

What are mason birds?

How do water birds build their nests?

How are the eggs of sea birds gathered?

Tell how the owls of the class of mining birds secure nests.

Name some birds of which the eggs are used for food.

What bird lays the largest egg?

What is the average length of the hatching season?

Commercial Value.

Name some birds the feathers of which are used in millinery.

Of what birds is the flesh eaten?

How are egrets obtained?

What is guano and where is it found chiefly?

Besides being valuable as food, what other uses are made of eggs?

Explain how birds are trained for falconry. 971.

How do birds aid in the destruction of insects?

Where were pigeons first used as carriers? Relate some instances where these messengers proved valuable.

Butterfly.

- I. LEPIDOPTERA (Scaly winged).
- II. DESCRIPTION.
  - 1. Body.
    - A. Head.
      - a. Antennae—Club shaped.
      - b. Eye—Compound.
      - c. Tongue — Two tubular threads for sucking and coiled when not in use.
    - B. Thorax.
      - a. Legs—Six.
        - (a) Weak and used only when resting or feeding.
      - b. Wings—Large and strong.
        - (a) First pair triangular, second rounded.
        - (b) Richly colored and covered with beautiful scales.
        - (c) Power—Great.
        - (d) Position—Held upright when at rest.
    - C. Abdomen.

CATERPILLAR, PUPA, AND BUTTERFLY.

- III. METAMORPHOSIS.
  - 1. Eggs.
    - A. Where deposited (Singly or in clusters on plant where larvae feeds)
    - B. Contains what?
      - a. Germ of larva.
      - b. Fluid to nourish germ.
    - C. Period of incubation.
      - a. Warm countries—Not over three weeks.
      - b. Cold climate—Much longer.
        - (a) Sometimes eggs deposited in fall do not hatch till spring.
  - 2. Larvae.
    - A. Length of time—Varies with climate.
      - a. Temperate regions—Three to four months.
      - b. Cold regions—Eight to ten months.
    - B. Caterpillar—Wormlike.
      - a. Characteristic—Great feeder.
      - b. Appearance—Very uncouth.
      - c. Destructiveness—Great.
  - 3. Pupa stage.
    - A. Chrysalis—With hard outer case.
    - B. How supported.
      - a. Many species attach themselves to leaves and hang head downward.
      - b. Others attach themselves at one end or suspend themselves with silk cord.
      - c. State of life.
        - (a) Appearance—Lifeless.
        - (b) Breathing—Through small pores.
      - d. Length of time in chrysalis stage.
        - (a) Some—A few weeks.
        - (b) Others—Continue through winter.

4. Image.
    A. Resemblance to caterpillar for few hours.
    B. Time of life—A few days.

IV. CHARACTERISTICS.
1. Diurnal day flyers.
2. Clubbed antennae.
3. Admired for beauty.
4. Migration.
    A. Tropical regions—Often moving many miles.
    B. Smaller species—Zigzag motion, often stopping to rest.
5. Male and female—Differ in color and size.
6. Purpose—To deposit eggs.

V. FOOD.
1. Nectar of flowers.

VI. HABITS.
1. Active in warm weather.
2. Associated with most beautiful vegetation and natural scenery.

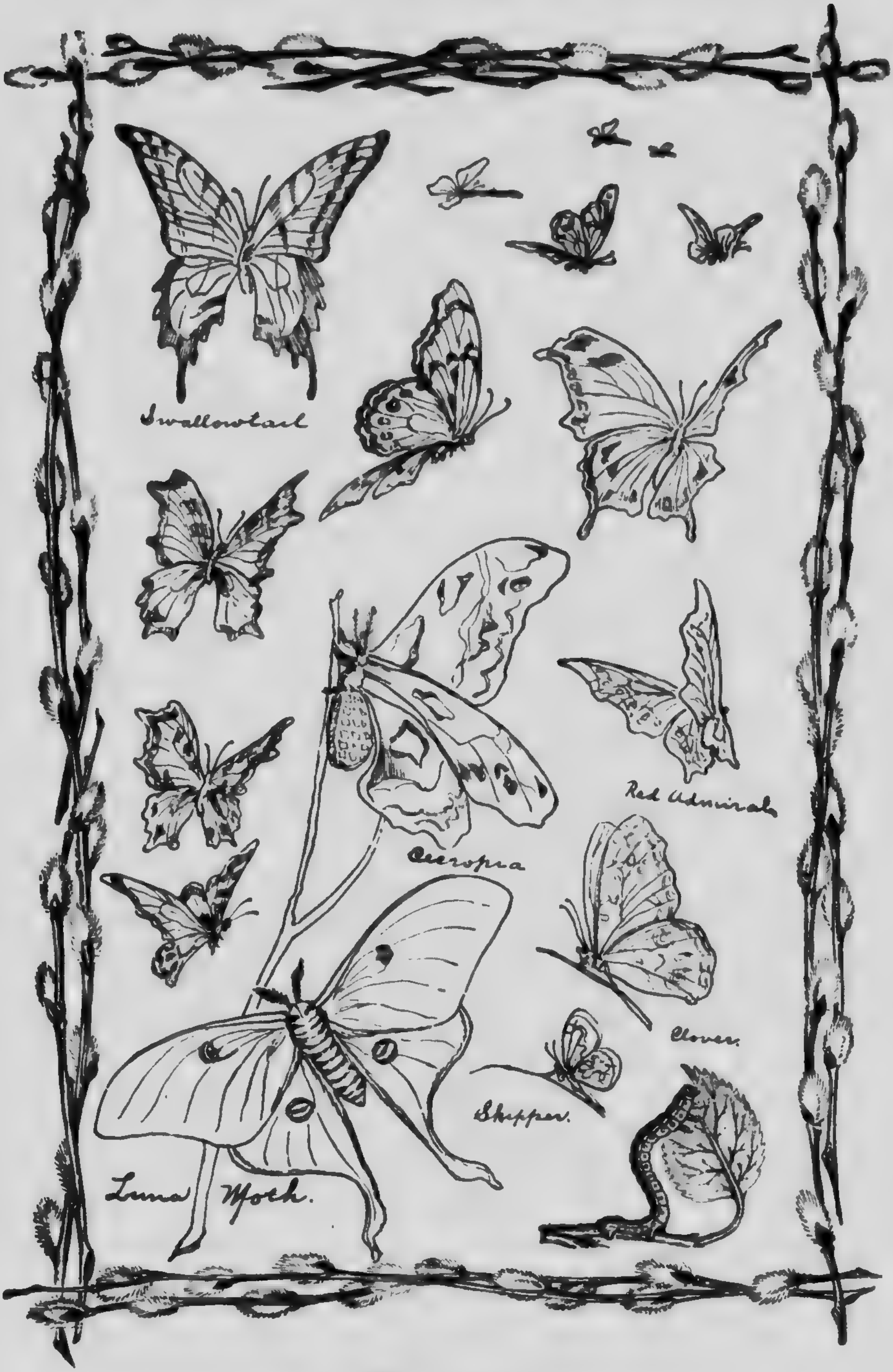
VII. CLASSES (50,000 species in the world).
1. Brush-footed butterflies.
2. Metal marks.
3. Blues, Coppers, and Hair-streaks.
4. Swallow-tails.
5. Skippers.

VIII. WHERE FOUND.
1. All parts of the world (As far north as Greenland—as far south as the Antarctic islands).

Memory Gems.

Oh! pleasant, pleasant, were the days,
The times when in our childish plays,
My sister Emmeline and I
Together chased the butterfly!
A very hunter did I rush
Upon the prey; with leaps and springs
I followed on from brake and bush;
But she, God love her! feared to brush
The dust from off its wings.
— *Wordsworth.*

A butterfly basked on a baby's grave,
Where a lily had chanced to grow:
"Why art thou here, with thy gaudy dye,
When she of the blue and sparkling eye,
Must sleep in the churchyard low?"
Then it lightly soared through the sunny air,
And spoke from its shining track:
"I was a worm till I won wings,
And she whom thou mourn'st like a seraph sings:
Wouldst thou call the bless'd one back?"



BLACKBOARD LESSON.

To a Butterfly.

Come to us often, fear no wrong,
Sit near us on the bough.
We'll talk of sunshine and of song,
And summer days when we were young;
Sweet childish days, that were as long
As twenty days are now.
—*Wordsworth.*

The Child and the Butterfly.

"Oh, butterfly, how do you, pray,
Your wings so prettily array?
Where do you find the paints from which
To mix your colors, warm and rich?"

The butterfly, in answer, said:
"The roses lend me pink and red,
The violets their blue,
And every flower its chosen hue.

"My palette is a rose-leaf fair,
My brush is formed of maiden-hair,
And dewdrops shining in the grass
Serve nicely for my looking-glass!"
—*Nixon Waterman.*

Questions on the Butterfly.

How many wings have butterflies? 419.

Into how many stages or periods may the life of a butterfly be divided?

How many months does it live in a wormlike form?

Where does it lay its eggs?

By what agency are the eggs hatched?

How far north are they found?

Do they have feathers?

What can you say about the destructiveness of the caterpillar?

What can you say about the length of life of a full-grown butterfly?

How many species of butterflies are there?

In what countries are butterflies found having wings a foot across?

How do butterflies protect themselves from their enemies?

Give three ways in which to determine the butterfly from the moth.

Name four kinds of moths. 1460.

What species of butterflies move about by twilight?

On what do butterflies feed? 419.

How many eggs will a single butterfly or moth lay? 506.

Which is the greater pest, the butterfly or caterpillar, and why?

How long does it take the caterpillar to turn into a butterfly under favorable conditions?

What are the principal enemies of caterpillars?

Do caterpillars eat flesh?

What can you say of the enormous amount of food consumed by the caterpillar compared to the weight of the larva?

How many legs has the caterpillar which produces butterflies?

How many eyes has a caterpillar?

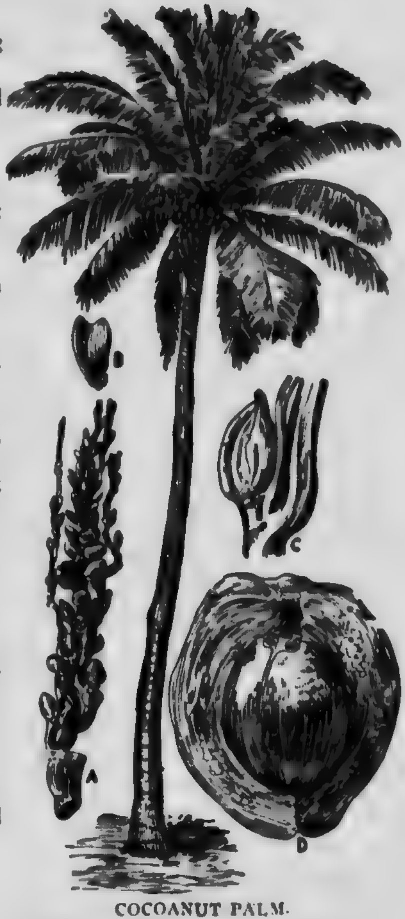
Cocoanut.

I. WHERE FOUND.
  1. Native to Africa, East Indies, West Indies, South America.
  2. Cultivated extensively in tropical regions.

II. DESCRIPTION.
  1. Tree.
    A. Height (Straight naked trunk 40 to 60 ft.).
  2. Leaves.
    A. Featherlike, growing [illegible] bunch at summit.
  3. Fruit or nuts.
    A. In clusters of a dozen or more.
    B. Length (3 to 8 inches).
    C. Cover (Fibrous husk).
    D. Inside kernel (Firm, white, fleshy).
    E. Milk (Within kernel, sweet and watery).

III. PRODUCTS OF FRUIT.
  1. Kernel.
    A. Article of food.
    B. Copra. C. Cocoa butter.
  2. Fibrous cover.
    A. Manufacture of yarn, matting, and cordage.
  3. Shells.
    A. Cups and vessels.

IV. PRODUCTS OF TREE.
  1. Wood.
    A. Construction of houses and other building purposes.
  2. Sap.
    A. Arrack. B. Jaggery.
  3. Leaves.
    A. To thatch cottages.



COCOANUT PALM.
A, Branch with flowers. B, male flower; C, female flower, D, fruit with the shell opened.

Questions on the Cocoanut.

Of what tree is the cocoanut a fruit and in what countries does it grow? 616.
Describe the cocoanut as to size and covering?
What articles of food are manufactured from the cocoanut?
What is copra and how is it made?
What articles are manufactured from the fiber covering of the cocoanut?
What articles are made from the shell of the nut?
What use is made of the wood of the tree?
What can you say of the color, use, and taste of cocoa butter?
Name three products made from the juice of the tree.
What is the height of a cocoanut tree?
How many cocoanuts grow on a tree?
What use is made of the leaves of the cocoanut tree?
What part of the cocoanut tree is used to make writing paper? For making baskets?

What part of the leaf is useful for making boat oars?
What part of the leaves is used for making drums?
What part of the tree is used for medicine? For chewing gum?
How is chocolate made?
What do the ashes of cocoanut leaves yield?
What part of the tree is used for making cradles and clothes?
What part of the tree is used for making baskets and buckets?
What use is made of the terminal bud of the cocoanut tree?

Coffee.

I. Where Found.
- 1. Native to Abyssinia and Arabia.
- 2. Cultivated—West Indies, Bermuda, Brazil, Ceylon, Mexico, Central America.

COFFEE PLANT.
A, Flower; B, Fruit Stock; C, Fruit; D, Section of Fruit.

II. Description.
- 1. Tree.
  - A. Wild (15 to 30 ft.).
  - B. Cultivated (8 to 10 ft.).
- 2. Leaves.
  - A. Dark green color.
  - B. Waxy appearance.
- 3. Flowers.
  - A. Color—White.
  - B. Where placed.
    - (a) Axils of leaves.
- 4. Fruit.
  - A. Oval, dark red berry resembling cherry.
    - (a) Berry contains two cells. The coffee nib of greenish color.

III. How Gathered and Prepared for Commerce.
- 1. Placing canvas under tree and shaking.
- 2. Berries dried in sun.
- 3. Passed between rollers which crush pulp.
- 4. Pulp removed by winnowing.
- 5. Seeds thoroughly dried.
- 6. Packed in large sack.
- 7. Roasted to produce brown color and caffeine.

IV. Use.
- 1. Assists digestion, retards waste, exhilarates spirits.

V. Kinds.
- 1. Mocha (Red Sea).
- 2. Java.
- 3. Jamaica.
- 4. Rio (South America).

VI. History.
- 1. Unknown to Greeks and Romans.
- 2. Dutch first cultivated it.
- 3. Seeds brought to Java in 1690.
- 4. Brazil and South America in 1774.

VII. Annual Output.
- 1. 1,550,000 tons (50 per cent. in Brazil).

VIII. CONSUMPTION PER PERSON PER YEAR.

1. Holland (23 lbs.).
2. Belgium (11 lbs.).
3. United States (10 lbs.).
4. Germany (6 lbs.).
5. France (4 lbs.).
6. Great Britain (1 lb.).

Coffee in Literature.

> Coffee, which makes the politician wise,
> And see through all things with his half-shut eyes.
>
> —*Pope*

In the late Civil War, the desire of the soldiers upon halting after a wearisome march, was to make a cup of coffee. This was taken without milk, and often without sugar, yet was always welcome.

—*Steele.*

The coffee houses devise and spread abroad divers false, malicious, and scandalous reports to the defamation of his majesty's government, and to the disturbance of the peace and quiet of the nation.

—*From proclamation of Charles II.* (1675).

The Turks have a dish called coffee (for they use no wine), so named from a berry as black as soot and as bitter, which they sip as warm as they can suffer, because they find by experience that that kind of drink so used helps digestion and procures alacrity.

—*Burton.*

Questions on Coffee.

To what countries is coffee native?

What is the height of the coffee tree in its native state? Why is it treated to make it smaller?

Theine in tea is closely identified with what constituent in coffee?

What is caffeine and how is it developed?

Give three points in favor of using coffee as a beverage.

With what is coffee adulterated? How may this be avoided?

Name several kinds of coffee and tell where each is grown.

What is the world's annual output? By which country is half of it produced? 619.

From where do United States and Canada secure their supply?

What is the annual consumption of coffee per person in Holland? In Great Britain?

Through what people was coffee brought to other countries? 619.

Describe the preparation of coffee from the time the berries are ready for gathering until it is in the cups before us on the dining table.

Crane.

CROWNED CRANE.

I. GENUS—Grus.
II. SPECIE—Wader.
III. MIGRATION—Winter bird of passage.
IV. DESCRIPTION.
  1. Size—About four feet high; 45 in. long.
  2. Color—Ash gray, or bluish white.
  3. Head—More or less naked.
  4. Neck—Long, arched.
  5. Windpipe—Perfectly straight at birth, coiled and from 3 ft. to 5 ft. long in adults.
  6. Bill—Short, compressed, and used as means of defense.
  7. Wings—Short, rounded, and powerful.
  8. Legs—Long and slender.
  9. Feet—Unwebbed; hind toe greatly elevated.
V. FOOD.
  1. Worms.
  2. Insects.
  3. Roots.
  4. Seeds.
  5. Snakes.
  6. Small quadrupeds.
VI. NESTS.
  1. A. On the ground, or in low bushes. B. Marshes.
  2. Eggs—Two.
VII. CLASSIFICATION AND HOMES.
  1. Crowned—Northern and Western Africa.
  2. Demoiselle—Central Asia and Africa (so called from elegance of its form).
  3. Whooping—North America (extensive trachea, producing resonant sounds with its voice).
  4. Sand-hill—North America.
  5. Sacred (Japan and India).
  6. Crowned—Northern Africa.
VIII. HABITS.
  1. Travel by night.
  2. Alight for food in daytime.
  3. Fly in wedge-shaped flocks, or in single lines.
  4. Have single leader.
  5. Travel at great speed.
IX. USE.
  1. Food.
  2. Plumage.
  3. Pets.
  4. Exhibition.
X. CHARACTERISTICS.
  1. Dances (During courtship).
  2. Antics.
  3. Display of feathers (Like peacock).
  4. Docility.
  5. Whooping.

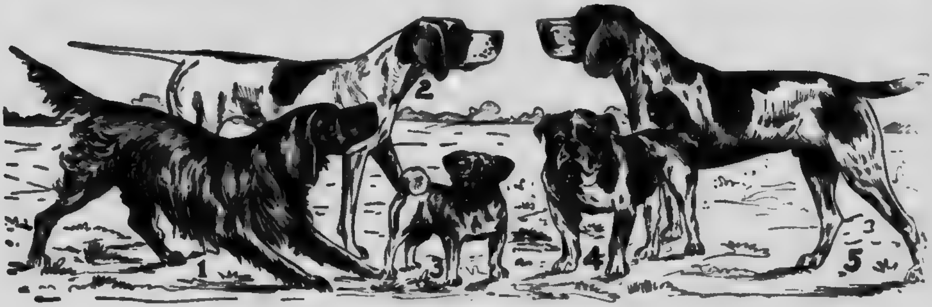
Questions on the Crane.

In what respects do cranes differ from storks and herons? 696.
Name several classes of cranes.
Why is the demoiselle crane so called?
What peculiarity is there about the trachea of the whooping crane?
Where is most of their food obtained?
How are they adapted for life in the lowlands?
When do they migrate? Mention some uses of cranes.
At what time do these birds perform peculiar antics?
In what countries are they held sacred?
What is their means of defense?
Which species are best known in United States?
In what respect are they like peacocks?
Describe the crowned crane and note the peculiarity about the head.

Dog.

I. ORIGIN AND FAMILY.

1. Genus—Canis.
2. Related animals—Fox, jackal, and wolf.
3. Possible origin—From the wolf.



FAMILIAR BREEDS OF DOGS.
1, Setter; 2, Pointer; 3, Pug; 4, Bulldog; 5, German Boarhound.

II. HISTORY AND ANTIQUITY.

1. Mentioned in the books of Moses and the writings of Homer.
2. Carved on an Assyrian monument.
3. Represented in Egyptian sculptures.
4. Used in sacrifice to deities by Romans, Greeks, and Celts.
5. Employed as executioners.

III. DESCRIPTION.

1. Size—Varies.
2. Color—Nearly all colors.
3. Structure—Varies greatly.
4. Hair—Straight, curly, or shaggy.
5. Voice and habits—Differ widely.
6. Intelligence and friendship—The truest animal friend to man.
7. Sense of smell—Often very acute.

IV. USES TO MANKIND.

1. Aids in subduing other animals.
2. Assists in hunting.
3. Protects human life and property against enemies.
4. Saves life at sea and in storms.
5. Tracks criminals.
6. Acts as guard and carries dispatches for armies.
7. Serves many conveniences in society.
8. Is used for food—By Indians and Eskimos.
9. Runs errands and carries parcels.
10. Is employed in herding stock.
11. Is used as a beast of burden, principally by the Eskimos.
12. Used in shows for performing animals.
13. Employed by the police to capture other dogs and criminals.
14. Hide is used for making leather and furs.

V. CHARACTERISTICS.

1. Born with eyes closed (Attains sight in eight to twelve days).
2. Maturity reached at about two years.
3. Average life (10 to 12 years).

VI. CLASSIFICATION.

- 1. Wolf dogs.
  - A. Saint Bernard.
  - B. Eskimo.
  - C. Spitz.
  - D. Newfoundland.
  - E. Shepherd.
  - F. Scotch Collie.
  - G. Welsh.
  - H. Schipperke.
  - I. Nootka.
  - J. Siberian.
- 2. Greyhounds.
  - A. Irish hound.
  - B. Greyhound.
  - C. Brinjaree dog.
  - D. Lurcher.
  - E. Egyptian street dog.
  - F. Scotch.
  - G. Italian.
  - H. Turkish.
  - I. Russian.
- 3. Watch dogs.
  - A. Danish dog.
  - B. German boarhound.
  - C. Matin, or Indian, dog.
  - D. Arabian boarhound.
  - E. Shepherd dog.
- 4. Hounds.
  - A. Old Southern hound.
  - B. Staghound.
  - C. Bloodhound.
    - a. English.
    - b. Cuban.
    - c. Russian.
  - D. Harrier.
  - E. Pointer.
  - F. Foxhound.
  - G. Setter.
    - a. Irish.
    - b. English.
    - c. Scotch or Gordon
    - d. Russian.
  - H. Blenheim.
  - I. Beagle.
  - J. Springer.
  - K. Cocker.
  - L. Poodle dog.
  - M. Hound.
  - N. Spaniel.
    - a. Lamb spaniel.
    - b. Water spaniel.
    - c. Toy spaniel.
    - d. Maltese spaniel.
    - e. Blenheim spaniel.
    - f. King Charles' dogs.
    - g. Cocker spaniel.
    - h. Mexican water spaniel.
- 5. Cur dogs.
  - A. Fox terrier.
  - B. Terrier.
    - a. Scotch.
    - b. Bull.
    - c. Welsh.
    - d. Irish.
    - e. Skye.
    - f. Boston.
    - g. Clydesdale.
    - h. Yorkshire.
    - i. Maltese.
    - j. Dandie Dinmont.
- 6. Mastiffs.
  - A. Bulldog.
  - B. Pug dog.
    - a. India pug.
    - b. Holland pug.
- 7. Unclassified.
  - A. Wild dogs.
    - a. Dingo.
    - b. Dhole.

Questions on the Dog.

Are wild dogs and domestic dogs of the same species? 810.
In what books do we find the first mention of dogs?
What other animals belong to the dog family?
Do naturalists agree upon the origin of dogs?
In what country is there a species of dogs found which have no hair?

In what countries have dogs been sacrificed to certain deities?

In what countries are dogs used for beasts of burden?

What use is made of dogs in the European armies?

Are dogs regarded as personal property?

Tell why the dog is the best friend of man of all animals.

How old do dogs live to be?

What kind of a dog would you select to catch a criminal? Why?

What breed of dogs can run the fastest?

Tell the story of Robert Bruce's escape from bloodhounds.

Name five ways in which dogs are useful to man.

Will a dog give his life for his master?

How old is a puppy before it opens its eyes?

What articles are made from the hide of dogs?

Describe the Eskimo dog. How far can a team pull a sledge in a day?

Tell what you can about the practice of bull baiting and the bulldog in former times in England.

Name three of the best known species of bloodhounds. Describe their ears and lips.

Where did the pug dog originate?

What is the favorite dog of Scotland?

Tell how the staghound differs from the greyhound.

Name five kinds of hounds and tell what each is noted for.

What breed of dogs is the most useful on the farm? Why? 2811.

Of what special use is the terrier? 2818

The Dog in Literature.

Every dog must have his day.
—*Swift.*

His faithful dog shall bear him company.
—*Pope.*

With eye upraised, his master's looks to scan,
The joy, the solace, and the aid of man;
The rich man's guardian, and the poor man's friend,
The only creature faithful to the end.
—*Crabbe.*

Ay, in the catalogue ye go for men;
As hounds, and greyhounds, mongrels, spaniels, curs,
Sloughs, water-rugs, and demi-wolves, are 'clept
All by the name of dogs: the valued file
Distinguishes the swift, the slow, the subtle,
The housekeeper, the hunter, every one
According to the gift which bounteous nature
Hath in him closed.
—*Shakespeare.*

Duck.

I. LAMELLIROSTRES.
  1. Anatidae.

MALLARD DUCK—MALE AND FEMALE.

II. DESCRIPTION.
  1. Bills (Broad, flat, and serrated; covered with a tender sensitive covering).
  2. Legs—Short.
  3. Feet—Webbed.
  4. Excellent swimmers.
  5. Good divers.
  6. Mostly strong on wing.

III. CLASSES.
  1. Wild.
    A. Mallard.
      a. Found in North America (A fine game bird).
      b. Color.
        (a) Male—Head, bluish-green; neck, chestnut colored with ring of white; body, various light, blue, and greenish shades; tail feathers, curved.
        (b) Female—Grayish color.
      c. Original of tame duck.
    B. Canvasback.
      a. Native of North America (Along estuaries and inland waters).
      b. Length (20 in.).
      c. Color.
        (a) Male—Head, reddish; bill, black; back and sides, grayish with lines like coarse canvas.
        (b) Female—Smaller and grayish.
      d. Migratory—Moving northward in March.
      e. Prized for flesh.
    C. Shoveler.
      a. Bill—Shovel shaped.
      b. Color.
        (a) Male—Finely decorated; breast, white; head and tail coverts, greenish.
        (b) Female—Dull plumage.
      c. Valued for flesh.
    D. Galwall, or Gray, duck.
      a. Found in northern part of both hemispheres, in fresh water.
      b. Color—Black and white.
      c. Flesh—Prized for food.
      d. Migratory—Moving south in winter.
    E. Eider Duck.
      a. Found on rocky shores of America and Europe.
      b. Color.
        (a) Male—Black and white spotted.
        (b) Female—Reddish drab, mixed with black and white bands on wings.
      c. Food—Insects, shellfish, small fish.
      d. Down from breast of female used for commerce.
      e. Eggs gathered for market.

F. Wood Duck.
    a. Remarkable for beauty.
    b. Migration.
G. Pintail.
    a. Domesticated.
        (a) Normandy.
        (b) Picardy.
        (c) Aylesbury.
        (d) Musk duck—Largest of ducks.

IV. Habits.
    1. Migration (Most species breed in higher latitudes).
    2. Nest (Where built).
        A. Generally among reeds near fresh water.
        B. Sometimes in hollows of trees or crevices of rocks.
    3. Eggs (Number 6 to 12).

V. Characteristics.
    1. Walking—Awkward, with waddling motion.
    2. Flight—Brisk.
    3. Swimming—Ability highly developed.
    4. Plumage.
        A. Marked difference between male and female.
        B. Male has four curved tail feathers.
    5. Voice of male—Low and basslike.

VI. Food.
    1. Animal.
    2. Vegetable.

VII. Use.
    1. Food.
    2. Feathers.
    3. Down.

Ode to a Water Fowl.

Whither 'midst falling dew,
While glow the heavens with the last steps of day,
Far, through their rosy depths, dost thou pursue
Thy solitary way?

Vainly the fowler's eye
Might mark thy distant flight to do thee wrong,
As, darkly painted on the crimson sky,
Thy figure floats along.

Seek'st thou the plashy brink
Of weedy lake, or marge of river wide,
Or where the rocky billows rise and sink
On the chafed ocean side?

There is a power whose care
Teaches the way along that pathless coast,
The desert and illimitable air,
Lone wandering, but not lost.

All day thy wings have fanned,
At that far height, the cold, thin atmosphere.
Yet stoop not, weary, to the welcome land,
Though the dark night is near.

And soon that toil shall end.
Soon shalt thou find a summer home, and rest,
And scream among thy fellows; reeds shall be
Soon o'er thy sheltered nest.

Thou'rt gone; the abyss of heaven
Hath swallowed up thy form; yet, on my hea
Deeply has sunk the lesson thou hast given,
And shall not soon depart.

He, who, from zone to zone,
Guides through the boundless sky thy certain flig
In the long way that I must tread alone,
Will lead my steps aright.

—William Cullen Brya

The Impervious Duck.

"How hoarse you are!" the wild Duck said,
"You've got your feet wet in the channel;
You're only fit to go to bed
And have your throat wrapp'd up in flannel."

"Tut, tut!" replied the Drake; "in truth
There's no occasion for these qualms, dear:
The Corncraik's hoarser far; in youth
He spoilt his voice with singing psalms, dear."

"That's more than ever you did, cried
The angry Duck; "it's most provoking
To such a creature to be tied;
I know your feet are simply soaking."

The season'd Mallard softly laid
His bill among his shoulder-feathers,
Serenely shut his eyes and paid
No more attention to her blethers.

—*Henry Johnstone.*

Memory Gem.

And this our life, exempt from public haunt, finds tongues in trees, books in running brooks, sermons in stones, and good in everything. —*Shakespeare.*

Test Questions on the Duck.

How many eggs do ducks lay?
Where do they lay their eggs?
What is the most common duck of Central North America?
Describe the mallard duck. 837.
From what kind of wild species have most of our domestic ducks been developed?
Which is the most valuable as food, duck eggs or hen eggs?
What is the largest species of the duck family?
Of what continent is the musk duck a native?
What can you say of the flesh of ducks as food?
What can you say of the migration of ducks?
Which lays the most eggs in a year, a duck or a hen?
What is the distinction in plumage in male and female?
Why is the pintail duck so called?
What can you say about the regularity of size and shape of duck bills?
How can you tell a male from a female duck without seeing them?
Is the duckbill a duck? 837.
Give three important uses of the duck.

Eagle.

BALD EAGLE.

- I. Genus—Aquila.
  - 1. Family—Falconidae.
    - A. Eagles.
    - B. Hawks.
    - C. Falcons.
- II. Classes.
  - 1. Golden Eagle.
    - A. Dark brown—Tawny color.
    - B. Yellowish tinge on back of head and neck.
    - C. Length.
      - a. 3 ft. from beak to end of tail.
      - b. 6 ft. expanded wings.
    - D. Food.
      - a. Poultry.
      - b. Rabbits.
      - c. Small quadrupeds.
    - E. Where found.
      - a. Eurasia.
      - b. North America.
  - 2. Sea Eagle.
    - A. Grayish brown color.
    - B. White tail.
    - C. Pale colored head.
    - D. Food—Fish and marine animals.
    - E. Where found.
      - a. Coasts of lakes and seas.
  - 3. Bald Eagle.
    - A. Color—Brown.
    - B. Neck, head, and tail white (After three years).
    - C. Great cowards and thieves.
    - D. Nest.
      - a. Tall tree.
      - b. Consists of sticks, sod, grass.
      - c. Nest added to year by year.
    - E. Food—Fish.
    - F. Where found.
      - a. America and Northern Eurasia.
  - 4. Serpent Eagle.
    - A. Southern Asia and Northern Africa.
  - 5. Harpy Eagle.
    - A. Larger than golden eagle.
    - B. Bill—Crooked.
    - C. Claws—Strong and sharp.
    - D. Color—Dark gray, barred with black above.
    - E. Breast—White.
    - F. Head bears handsome crest.
    - G. Feathers used by Indian for decorations.
    - H. Found in tropics.
  - 6. Lammergeier.
    - A. Length—Four feet.
    - B. Wing expansion—9 ft. to 12 ft.

- C. Food.
  - a. Carrion.
  - b. Living prey—Kids, lambs, chamois, and hares.
  - c. Where found.
    - Southern part of Europe and Asia.
    - Northern part of Africa.
- 7. Other species.
  - a. Imperial. b. Eagle hawk. c. Crested eagle.

III. HISTORY.

1. Symbol of Persians 401 B. C.
2. War standard to Egyptians.
3. Romans 104 B. C. (Military standard).
4. Napoleon adopted eagle as symbol of France.
5. Double-headed eagle, emblem of Russia.
6. Introduction into Germany by Charlemagne.
7. Prussian Order of Black Eagle. 1701.
8. Standard of Austria.
9. Symbol of United States, representing fortitude, power, courage, nobility.

The Bald Eagle.

High soars a patriarchal oak,
Its umbrage scath'd by lightning-stroke,
Upon whose topmost bough doth dwell
An eagle, monarch of the dell,
O'erlooking from his eyrie grand,
The wide expanse of forest land;
Now rising high in air to sweep
In circling rings the upper deep,
Now pois'd and balanc'd in mid-space,
As resting on his airy chase;
Now sweeping downward on its way
As pirate bark sweeps on its prey.

—*Isaac McLellan.*

Questions on the Eagle.

What bird soars the highest in flight? 852.
Where is the golden eagle found? Describe it.
In what countries is the bald eagle found?
Do eagles eat carrion?
What can you say about the eagle as a symbol of societies and nations?
When and by whom was the eagle adopted as the symbol for France?
Who introduced the eagle in Germany as the standard?
How many orders of societies of eagles are there in Germany?
Describe the Prussian Order of the Black Eagle. 853.
When did France abolish the eagle as a symbol?
What bird is regarded as the most noble and courageous of the birds of prey?
Describe the sea eagle.
Where is the harpy eagle found? Where does it live and upon what does it feed? 1256.
What use did the Indian make of its feathers?
Will they attack a human being?
For what does the eagle stand?
How did the ancient Prussians regard the eagle?
What was the custom among the Romans in regard to the eagles of silver and gold?
What is the value of the gold eagle of the United States?
When coined and what is the weight?

Fly.

- I. **Diptera** (Two winged).
- II. **Species** (Over 40,000).
- III. Description.
  - 1. Wings—One pair present; second pair reduced to threadlike appendages (Balancers).
  - 2. Head—Small.
  - 3. Mouth parts—Adapted for piercing and sucking.
  - 4. Eyes—Very large and compound, sometimes containing as many as 4,000 single eyes.
  - 5. Feet—Delicate pads for climbing upon smooth surfaces.
- IV. Metamorphosis.
  - 1. Eggs.
    - A. Deposited in refuse.
    - B. Hatched in one day.
  - 2. Larvae (Maggots)—Active scavengers.
  - 3. Pupa stage (14 days).
  - 4. Rapidity of increase exceedingly great.

1, MUSCID; 2, SYRPHUS; 1a, FLY'S FOOT.

- V. Characteristics.
  - 1. Skill in walking—Able to walk on smooth surface and with back downward.
    - A. How—
      - a. By hairlike cushion.
      - b. Partly by glutinous fluid secretion.
      - c. Partly by removing air from feet by suckers.
- VI. Food.
  - 1. Sweet juices.
  - 2. Decayed matter and offal.
- VII. Harmfulness.
  - 1. Annoyance—Great, both to animals and human beings.
  - 2. Breeders of disease—By carrying germs of decaying matter and depositing on food.
- VIII. When Most Prevalent.
  - 1. In tropics—The entire year.
  - 2. In Temperate Zone—In the warm season.

Test Questions on the Fly.

About how many thousand species of the fly have been described? 1023.
How long does it take a fly's egg to hatch?
How long do the young remain in the larval stage?
How do the flies walk on the ceiling?
What is the use of flies?
Where in the United States have 1,500 species of flies been found, in fossil and shale beds?
Do we have a drone fly?
Describe the under lip of a fly. What is its use?
Describe the habits of the fly catcher.
How does the fly balance itself?

Grapes.

I. GENUS—Vitis (A climbing vine).

II. DESCRIPTION.
  1. Stem—Woody and supported by strong tendrils.
  2. Bark—Dark brown like that of a tree.
  3. Leaves—Large, broad, deeply three lobed, and hairy.
  4. Blossoms—Small and of a greenish color.
  5. Fruit.
    A. Shape—Round or spherical and grows in clusters.
    B. Size—One-fourth to one inch in diameter.
    C. Color—Green, yellow, red, purple, or variegated.
    D. Interior—Soft pulp, containing two to five seeds.
    E. Outer skin—Tough and indigestible, but contains acid which develops flavor in cooking.

III. KINDS.
  1. Wild (500 species indigenous to North America).
  2. Cultivated.
    A. Popular species.
      a. Concord.
      b. Catawba.
      c. Niagara.
      d. Clinton.
      e. White Frontignan.
      f. Madeira.
      g. Black Prince.

IV. HOW PROPAGATED.
  A. Inoculation (Budding).
  B. Cuttings.
  C. Grafting.
  D. Seeds.

V. CULTIVATION.
  1. Rows—About 10 ft. apart.
  2. Ground—Cultivated in other crops for a couple of years and subject to clean culture.
  3. Support, for vines—Trellises.
  4. Trimming—Necessary to secure a large yield.
  5. Where cultivated.
    A. Warm or Temperate zones.
    B. Countries.
      a. Western Asia.
      b. Southern Europe.
      c. United States—New Jersey, Delaware, New York, Ohio, Illinois, and California.
      d. Southern part of Canada.

VI. USE.
  1. Raisins.
  2. Wine.
  3. Table use.

VII. HISTORY.
  1. Time—Immemorable.
  2. Introduced into Europe by the Phoenicians.
  3. Grape culture in California—Begun by Spanish missionaries in 1771.

The Grape-Vine Swing.

Lithe and long as the serpent train,
  Springing and clinging from tree to tree,
Now darting upward, now down again,
  With a twist and a twirl that are strange to see;
Never took serpent a deadlier hold,
  Never the cougar a wilder spring,
Strangling the oak with the boa's fold,
  Spanning the beech with the condor's wing.

Yet no foe that we fear to seek—
  The boy leaps wild to thy rude embrace;
Thy bulging arms bear as soft a cheek
  As ever on lover's breast found place;
On thy waving train is a playful hold
  Thou shalt never to lighter grasp persuade;
While a maiden sits in thy drooping fold,
  And swings and sings in the noonday shade!

O giant strange of our southern woods,
  I dream of thee still in the well-known spot,
Though our vessel strains o'er the ocean floods,
  And the northern forest beholds thee not,
I think of thee still with a sweet regret,
  As the cordage yields to my playful grasp.—
Dost thou spring and cling in our woodlands yet?
  Does the maiden still swing in thy giant clasp?

—*Simms.*

Questions on Grapes.

Of what region are the best fruit-bearing grapes supposed to be native?
What people introduced the grape into Europe from Asia? 1181.
When was the grape first introduced into America?
Give four ways in which the grape plant may be propagated.
What is the greatest wine-producing State in the Union?
How many species of grapes are indigenous to North America?
Tell how grapes are cultured and propagated.
Name five of the best kinds of market grapes.
What can you say of the wild grape as to qualities and distribution?
Do we have seedless grapes?
What nations lead in the production of wine?
What country is noted for its production of the large species of grapes?
How many times a year does the grape bear in warmer climates?
What kind of grapes is used in making sweet wine?
What State produces the best grade of wine? 3162.
How is white wine made? Why is it white?
About what per cent. of grapes does the juice equal of the entire weigh
3162.
Explain how cream of tartar is made from the grape. 699.
Tell how the raisin is made from the grape. What State leads in the production of raisins?
What countries produce large quantities of raisins? 2370.
What can you say of the vineyards of Ontario? 2038.

Grasshopper.

I. **Orthoptera** (Straight winged).

II. **Description.**

1. Body—Compressed.
2. Wings—Four in number, folded like sides of a roof.
   - A. First pair thickened, overlapping second pair.
   - B. Second pair thin and folded like a fan.
3. Legs—Long and slender.
   - A. Thighs of hinder legs large and adapted for leaping.
4. Antennae—Long and threadlike.

ADULT GRASSHOPPER.

III. **Habits.**

1. Often fly in swarms, forming black clouds.
2. Destruction—Often great, especially to growing crops in arid regions.
3. Sound.
   - A. Very characteristic, caused by rubbing wings and wing covers together during flight.
   - B. Also by rubbing the serrated hind legs against the wing covers.
4. Young—Go through stage of metamorphosis.

IV. **Food.**

1. Vegetation.
2. Insects.

Questions on Grasshoppers and Locusts.

Describe the grasshopper. 1182.

To what other insects are they closely related?

How do they produce their peculiar sound?

Where does the grasshopper deposit its eggs?

In what states have they been so numerous at times as to obscure the sun? 1615.

When are their eggs laid and when do they hatch?

Describe the locust. 1615.

What can you say about their destruction of vegetable growth?

By what people is the locust used as food?

What measures are taken to prevent the advance of locusts in the destruction of crops?

When are locusts the most destructive to crops?

In what states are locusts the most abundant?

In what way do they interfere with railroad traffic?

Which jumps the farthest, the grasshopper or locust?

How many particular species of locusts are found in North America?

Heron.

GREY (BLUE) HERON.

- I. FAMILY—Ardeidae.
  - 1. Genus—Ardea.
- II. DESCRIPTION.
  - 1. Bill—Sharp, straight, and longer than head and cleft between eyes.
  - 2. Legs and neck—Long, adapted for wading.
  - 3. Body—Slender and compressed.
  - 4. Toes—Three in front, two outer united by membrane.
  - 5. Wings—Very long.
  - 6. Tail—Short, round, and compressed.
  - 7. Ornamented crests and handsome plumes on throat and body.
  - 8. Movements.
    - A. Graceful and elegant on land.
    - B. Awkward in flight because of long legs stretched out behind.
- III. CLASSES.
  - 1. Great blue heron (Native of North America).
    - A. Color—Grayish-blue, black quill feathers.
  - 2. Green heron (North America).
  - 3. Snowy heron (Gulf of Mexico).
    - A. Pure white plumage.
    - B. Black legs and bill.
- IV. HAUNTS—Ponds, marshes, fresh-water streams, lakes, seacoast.
- V. FOOD.
  - 1. Secured by wading (Often standing motionless in the water waiting for fish).
  - 2. Insects, frogs, fish, rats, mice, young of birds, mollusks.
- VI. NEST.
  - 1. Built in trees. 2. Others in bushes. 3. Eggs three to four.

The Heron in Poetry.

Oh! give me back my thicket by the marsh!
  Let me see the herons wade
  In the watery glade,
And let me see the water-fowl go by
Glimmering against the sky.
—*Maurice Thompson.*

The heron builds her nest in the tall pine,
  That rises high, a watch-tower in the land,—
The while her mate, by stream or crystal pool,
  Stands, mute and listening, warder of the strand.
—*Ella F. Mosby.*

Far up some brook's still course, whose current mines
The forest's blackened roots, and whose green marge
Is seldom visited by human foot,
The lonely heron sits, and harshly breaks
The Sabbath silence of the wilderness;
And you may find her by some reedy pool,
Or brooding gloomily on the time-stained rock
Beside some misty and far-reaching lake.

Questions on the Heron.

What other birds are related to the heron? 1294.
Name three kinds of herons native to North America.
Where does it build its nest?
How many eggs does it lay?
Upon what does the heron feed? 1295.
Of what value is the heron?
What is the height of the heron?
Describe the bill and plumage.
Which is the taller, a flamingo or heron? 1010.
Compare the heron with the spoonbill. 2714.
Where is the egret found and for what is it noted? 881.
Describe the snowy egret. For what is it hunted very extensively?

Grotesque and tall, he stands erect
  Where the reed-riffle swirls and gleams—
Grave, melancholy, circumspect,
  A hermit of the streams.

—Ernest M'Gaffey.

The Brooding Season.

Soft sits his brooding mate, her guardian he,
Perch'd on the top of some tall, neighboring tree;
Thence, from the thicket to the concave skies,
His watchful eye around unceasing flies.

—Alexander Wilson.

The Great Blue Heron.

I saw him flit across the leaden west,
Slow flap his way, poise high the wings of slate,
The trailing feet upon an oak's dead crest
To anchor drop, a migrant ship of state.

I saw him next among his bayous bleak,
Slim, sombre, mute, and grim, with listless wing;
With yet a fierce reserve of eye, a beak
The shafted lightning, egret crowned, a king.

I saw him last where palms their plumes upreared,
The mystic ibis of my lady's bower,
An alien, stark, majestic still, a weird
Gray ghost of decorative grace and power.

—J. Vallance Brown.

Jay.

I. ORDER—Passeres.
   1. Family—Corvidae.

II. DESCRIPTION
   1. Feet—Adapted for perching.
   2. Bill—Rather short and sharp.
   3. Wings—Blue or brownish red color.
      A. Considerably shorter than tail.
   4. Tail—Very long and rounded, sometimes longer than body.
   5. Head—Tuft on top.

BLUE JAY. EUROPEAN JAY.

III. SPECIES (About 20).
   1. Blue Jay.
      A. Best known and handsomest.
      B. Voice.
         a. Harsh and grating.
         b. Great power of imitating other birds.
      C. Motion—Fantastic.
      D. Plumage—Bright blue, black, and white.
      E. Nest.
         a. Trees.
         b. Formed of twigs lined with grass.
         c. Eggs—Four or five, olive-brown, dark spotted.
   2. Canada Jay.
      A. Coloring—Somber.
      B. Bold, noisy, active.
      C. Friend of moose, hanging from its horns in search of parasites.
      D. Northern part of North America.
   3. English Jay.
      A. Larger than blue jay.
      B. Color—Light brown, inclining to red.
   4. European Jay.
      A. Color—Cinnamon, varied with white, black, and blue.

IV. WHERE FOUND.
   1. Both hemispheres.

V. FOOD.
   1. Insects, seeds, fruits.
   2. Eggs and young birds.

The Canada Jay.

With mingled sound of horns and bells,
  A far-heard clang, the wild geese fly,
Storm-sent from Arctic moors and fells,
  Like a great arrow through the sky,
Two dusky lines converge in one,
Chasing the southward-flying sun;
While the brave snow-bird and the hardy jay
Call to them from the pines, as if to bid them stay.

—John G. Whittier

The Jay in Literature.

What, is the jay more precious than the lark,
Because his feathers are more beautiful?
Or is the adder better than the eel,
Because his painted skin contents the eye?
—*Shakespeare.*

Ten thousand warblers cheer the day, and one
The live-long night: nor these alone the notes
Nice-fingered art must emulate in vain,
But cawing rooks, and kites that swim sublime
In still repeated circles, screaming loud,
The jay, the pie, and ev'n the boding owl
That hails the rising moon, have charms for me
—*Cowper.*

The jay is a jovial bird—Heigh-ho!
He chatters all day
In a frolicsome way
With the murmuring breezes that blow—
Heigh-ho!

Hear him noisily call
From the redwood tree tall
To his mate in the opposite tree—Heigh-ho!
Saying, "How do you do?"
As his topknot of blue
Is raised as polite as can be—Heigh-ho!

Oh, impudent jay,
With your plumage so gay,
And your manners so jaunty and free—
Heigh-ho!
How little you guessed,
When you robbed the wren's nest,
That any stray fellow would see—Heigh-ho!
—*Selected.*

Questions on the Jay.

To what family of birds does the jay belong? 1445.
Give three ways in which a jay bird may be distinguished from the crow.
About how many species of the jay bird are known?
Describe the head and wings.
Of what countries are the different species native?
Name five kinds of food upon which the jay bird feeds.
Compare the English jay with the American blue jay as to color and size.
What can you say about the voice and its cultivation when tamed?
How does the length of the tail compare with the length of the body?

Lemon.

I. Citrus Medica (Orange Family).
II. Description.
1. Tree—Knotty wooded, about eight feet in height.
2. Leaves—Oval, containing oil used in making extracts.
3. Fruit.
A. Shape—Ellipsoidal, with protruding point at each end.
B. Length—2 in. to 4 in.
C. Color—Bright yellow.
D. Skin—Quite thick.
E. Internal pulp—Acid and juicy.
F. Number of compartments—8 to 12, each containing several seeds.
G. Number on tree —3,000 or more.
III. How Gathered.
A. Picked while green.
B. Wrapped in small papers.
C. Shipped in boxes.
D. Ripened during transit.
IV. Kinds.
1. Sweet lemon.
2. Thick-skinned lemon.
3. Common lemon.
4. Citron lemon.

LEMON.
A, Flower; *B*, Section of Fruit.

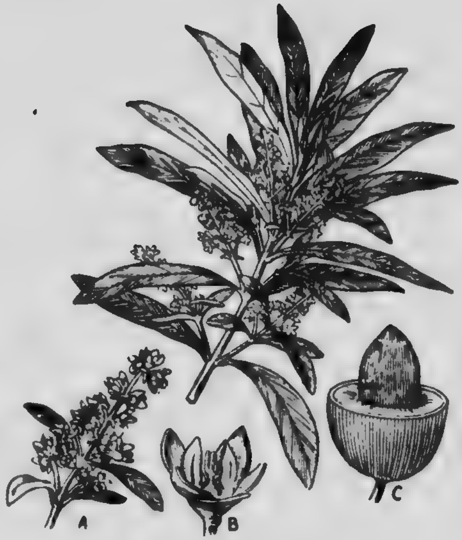
V. Uses.
1. Oil of lemon—Volatile substance secured from rind pressure.
2. Extract—Made from imperfect fruit by squeezing.
3. Lemonade. 4. Stimulant in medicine. 5. Perfumery.
VI. Where Grown.
1. United States—California and Florida.
2. Southern Europe. 3. Australia.

Questions on the Lemon.

Which are the more profitable to grow, oranges or lemons?
What is the height of a lemon tree? 1568.
How many lemons will a tree produce in favorable seasons?
Name four kinds of lemons.
How is the oil of lemon manufactured?
How is lemon extract made? For what is it used?
What states in the United States produce the largest quantities of lemons?
When was lemon cultivation introduced in Australia?
What can you say of the keeping properties of the lemon?
Were lemons known to the ancient Greeks and Romans?
Name six uses of the lemon.
Name two islands in the Mediterranean sea that are noted for their production of lemons.
Who introduced the cultivation of lemons in Spain and at what date?
How have lemons been improved?
What can you say of the wood of the lemon tree?
What is the shape of the leaves?

Olive.

- I. DESCRIPTION.
  - 1. Tree.
    - A. Evergreen.
    - B. Height (15 ft. to 30 ft.).
    - C. Growth—Very slow, but hardy and long lived.
    - D. Trunk—As it grows old, becomes gnarled, broken, and twisted.
  - 2. Leaves.
    - A. Shape — Lanceolate or oblong.
    - B. Surface.
      - a. Smooth above and horny beneath.
    - C. Color — Bluish or dusky green.
  - 3. Flowers.
    - A. Size—Small, growing in terminal racemes or clusters.
    - B. Color—Whitish, appearing in June, July, and August.



OLIVE.
A, Cluster of flowers; B, Single flower; C, Fruit.

- 4. Fruit
  - A. Shape—Oblong, spheroidal.
  - B. Skin—Smooth and thin.
  - C. Stone—Hard.
  - D. Pulp—Soft and greenish.
- III. HOW PREPARED FOR COMMERCE.
  - 1. Olives for table use.
    - A. In unripe condition.
    - B. Soaked in potash and water to reduce bitterness.
    - C. Bottled in aromatized brine.
  - 2. Olive Oil.
    - A. Process of securing.
      - a. Olives gathered.
      - b. Placed immediately in crushing mill and ground into pulp.
      - c. Pulp placed in press operated by screw.
      - d. Oil remains on top, impurities settling.
      - e. Oil oozes from pulp into barrel containing water.
      - f. Virgin oil—Product of first pressure.
      - g. Last product inferior, used for soap, pulp, or fuel.
      - h. Clarification—Filtered through sand and charcoal.
- IV. WHERE FOUND.
  - 1. Native of Syria.
  - 2. Grown in Asia, Europe, Australia, Southern States, California.
- V. HOW PROPAGATED.
  - 1. Slips.
  - 2. Seeds.
  - 3. Grafting.
- VI. USE.
  - 1. Table use.
  - 2. For olive oil.
  - 3. Wood prized in cabinet work.
  - 4. For adulterating and flavoring tea (China).

VII. HISTORY.
  1. Associated with garden of Gethsemane.
  2. Held sacred to Minerva by ancients.
  3. Wreaths of olives—Placed on brows of victors by Greeks and Romans.
  4. Emblem of peace—So regarded by many nations.
  5. Introduced in United States—200 years ago.

Questions on the Olive.

What can you say of the use and value of olive wood? 2032.
How was the olive tree regarded by the ancients?
What is the height of the olive tree?
What is the color of the flower?
How old will an olive tree live to be?
How is the bitter taste of olives reduced?
How is olive oil made?
What is virgin olive oil?
What quality of olive oil is used in soap making?
What part of the olive is used for fuel?
How is the olive tree propagated?
When was olive oil introduced in the United States?
In what countries are plantations of olive trees most abundant?
How is olive oil clarified to give it its beautiful golden color?
The oil of what nut is sold as a substitute of olive oil?
Olives intended for table use are picked in what condition?
The olive branch is a symbol of what?
What are the principal uses of the olive fruit?
What commercial product is sometimes adulterated by the use of olive leaves?

Orange.

I. ORDER—Rutaceae.
II. DESCRIPTION.
  1. Tree.
    A. Small evergreen.
    B. Height (Wild 30 ft.; tame, much less).
    C. Time required to bear, 6 years.
    D. Age (Often 600 years).
    E. Wood—Fine grained, smooth.
  2. Leaves.
    A. Color—Green.
    B. Shape—Oblong, thick, smooth.
  3. Flower.
    A. White—Waxlike and fragrant.
    B. Worn by brides.
  4. Fruit.
    A. Color—Bright yellow.
    B. Shape—Spherical.
    C. Rind—Thick.
    D. Pulp—Collection of oblong segments filled with luscious juice.

III. **Varieties.**
   1. China orange.
   2. Lisbon orange.
   3. Maltese, or red pulped, orange.
   4. Mandarin, or clove (Small and flattened) orange.
   5. Saint Michael.
   6. Majorca seedless.
   7. Tangerine.
   8. Valencia.
   9. Egg orange (Oval shape).
   10. Navel—seedless.
   11. Blood oranges—Dark red juice.
   12. Russets—Florida.

IV. How Picked.
   1. Picked while green.
   2. Wrapped in paper.
   3. Shipped in boxes of 250.
   4. Ripened during transit.

V. Use.
   1. Sweet, for eating.
   2. Bitter, for flavoring and medicine.
   3. Fragrant oils from rind, leaves, and flowers.
   4. Curaçoa—Drink.

ORANGE.

VI. Where Grown.
   1. United States — California, Florida, and Louisiana.
   2. Mexico.
   3. West Indes.
   4. East Indies.
   5. China.
   6. India.
   7. Australia.
   8. North Africa.

Questions on the Orange.

At what age does the orange tree begin to bear fruit? 2015.

Which obtains the greater age, an orange tree or an olive tree?

Which produces the greater number of fruit, orange trees or lemon trees?

What is Curaçoa? Is it made from the best class of oranges?

About how many oranges are shipped in a box?

What is the name of the variety of oranges which are egg shaped?

What is a Maltese orange?

What is a clove orange, or Mandarin orange?

How do the different species of orange fruit originate?

What is the color of orange flowers and what can you say of their fragrance?

When was the first orange cultivated in Portugal?

Of what country is the orange a native?

What states produce the most oranges?

What is the difference between the California orange and the Florida orange?

What is a blood orange? Why is it so called?

From what are the fragrant oils of the orange obtained? What are their uses?

Name eight varieties of oranges sold on the market.

What uses are made of the bitter orange?

What can you say of the value of the wood of the orange tree?

What can you say of oranges as to food value?

Why are orange blossoms worn by brides on their wedding day?

Why is the navel a special favorite with the consumer?

Ostrich.

I. Genus—Cursores.
  1. Related to rhea, emu, cassowary.
II. Description.
  1. Largest of living birds.
  2. Height—6 ft. to 8 ft.
  3. Weight—70 lbs. to 300 lbs.
  4. Head—Flat.
  5. Bill—Stout.
  6. Eyes—Large.
  7. Neck—Long and naked.
  8. Legs—Long and powerful, giving great speed.
  9. Toes—Two, corresponding to third and fourth of other birds.
  10. Neck and thighs—Bare.
  11. Wings—Small, of little service in flight.
  12. Feathers — Fluffy and plumelike.
  13. Color.
    A. Males — Shiny, black, with white plumes at end of wings and tail.
    B. Females — Dull, brown color.
    C. Chicks—Striped.

RHEA. OSTRICH.

III. Characteristics.
  1. Timidity.
  2. Remarkable speed, often outstripping the fastest horse.
IV. Food.
  1. Wild state.
    A. Herbs, seeds, and fruits.
  2. Domesticated.
    A. Usually fed on alfalfa or grass and clover mixed with fruit.
V. Rearing of Young.
  1. Nest (Built in sand).
  2. Eggs.
    A. Number—8 to 15 from several hens.
    B. Weight—About 3 lbs.; about 20 in. in circumference.
  3. Hatching.
    A. Incubated by cock and hen alternating, cock usually occupying nest at night.
    B. Length of time required for hatching (6 weeks).
VI. Why Domesticated.
  1. For feathers.
    A. Black and white plumes from male.
    B. Brown from female.
    C. Value—Varying according to size and quality from a few cents to $50.
VII. How Hunted.
  1. On horseback or by using covering of ostrich skin.
  2. Defend themselves with great vigor by means of powerful legs and beaks.
  3. Sound—Something like cackle, seldom given except in distress.

VIII. WHERE FOUND.

1. Native to deserts of Africa and Arabia.
2. Ostrich farms.
    - A. South Africa.
    - B. North Africa.
    - C. California.
    - D. Australia.
    - E. Arizona.
    - F. Mexico.

Questions on the Ostrich.

To what countries is the ostrich native? 2062.
What other birds resemble the ostrich?
What is the height of the full-grown ostrich?
Speak of the ostrich as to size and strength.
What can you say of its antiquity and mention in early history?
How many toes has the ostrich?
In the wild state, what animals does the ostrich usually follow?
What is their principal means of safety from their enemies?
What is the color of the male ostrich?
How many plumes will an ostrich yield a year?
What is the price of ostrich plumes per pound?
Tell how ostriches are hunted.
How many ostrich eggs are laid in the same nest?
How are the eggs hatched?
Which sits on the nest at night, the male or female?
How many pounds will an ostrich egg weigh?
How long does it take an ostrich egg to hatch?
What is the average weight of the ostrich?
What is the average stride of the ostrich in walking? In running?
Is the flesh fit to be eaten?
What are the principal differences between the rhea and the ostrich?

A Few of the Bird Family.

The old bob white, and chipbird;
The flicker and chee-wink,
And little hopty-skip bird
Along the river brink.

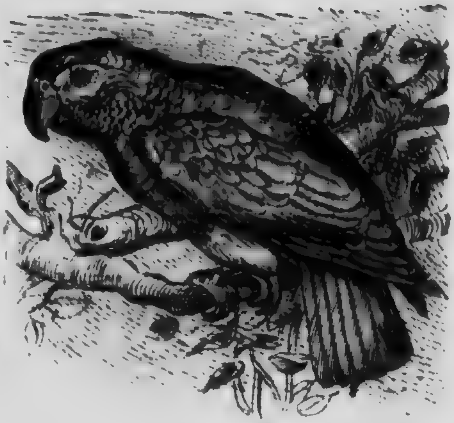
The blackbird and snowbird,
The chicken-hawk and crane;
The glossy old black crow-bird,
And buzzard, down the lane.

The yellowbird and redbird,
The tom-tit and the cat:
The thrush and that redhead bird
The rest's all pickin' at!

The jay-bird and the blue bird,
The sap-suck and the wren—
The cockadoodle-doo bird,
And our settin' hen!

—*James Whitcomb Riley.*

Parrot.



GRAY PARROT.

- I. Class—Climbers.
- II. Species—(About 350 known, 150 of which are in America).
- III. Description.
  - 1. Size—From that of swallow to birds of 3 ft. in length.
  - 2. Color—Bright green, red, blue, and yellow.
  - 3. Tongue—Soft, large, fleshy (Sometimes fringed, or tufted). Barbarous tribes sometimes slit tongue to cause better articulation.
  - 4. Bill—Stout and hooked, movably hinged to jaw.
  - 5. Wings—Short, broad.
  - 6. Feet—Rough, stout.
    - A. Toes.
      - a. Two before, two behind.
      - b. Outer toe turned backward.
  - 7. Voice—Coarse and harsh, though articulate.
- IV. Food.
  - 1. Fruit.
  - 2. Nuts.
  - 3. Seeds.
  - 4. Buds.
  - 5. Plantain.
  - 6. Insects.
- V. Nests.
  - A. Where made.
    - 1. Hollow trees.
    - 2. Holes in rocks.
    - 3. Deserted buildings.
  - B. Eggs.
    - 1. Number—2.
    - 2. Color—White.
    - 3. Shape—Rounded.
- VI. Characteristics.
  - 1. Affectionate.
  - 2. Imitative.
  - 3. Docile.
  - 4. Hardy.
  - 5. Long lived.
- VII. Kinds.
  - 1. Gray parrot.
    - a. Home—West Africa.
    - b. Color—Ashy white, black wing quills, red tail.
    - c. Skill—The best of talker
  - 2. Carolina parrot.
    - a. Home—United States.
    - b. Size—12 in. or 13 in. long
    - c. Color—Green back, yellow head, red cheeks (Fa becoming extinct).
  - 3. Macaw.
    - a. Where found.
    - b. Size.
    - c. Plumage—Beautiful.
    - d. Number of broods—Tw per season.
  - 4. Cockatoo.
    - a. Name—From peculia harsh utterance.
    - b. Head—Tufted crown.
    - c. Lives in tribes.
    - d. Easily domesticated.

Questions on the Parrot.

About how many species of parrots are known? In which country are the most species found?

What is said of the comparative size of these birds? Which are the largest and where are they found?

Why are the love birds so called? Describe the tongue.

Which species is said to best imitate the human voice?

How do the Carolina parrots differ from others of America?

Mention a peculiar fact of the macaws in brooding.

What is said of the temperament of parrots? 2114.

Where do these birds best like to be? What progress do they make when going about on the ground?

For what are the macaws noted?

Where are the favorite nesting places?

In which zones are parrots most numerous?

Story of a Nest.

Far away in the beautiful land of Brazil,
Where the birds are all singing o'er valley and hill,
Two little children walked out 'neath the trees,
Talking in musical Portuguese;
And if you will listen to what I say,
I'll tell you in English their words that day.
"Sister," said Manuel, "often I've heard,
That the trees scarce have room for the nest of each bird;
For this is the land of these beautiful things,
And the air seems alive with their songs and their wings;
And I think that I know of a little bird breast,
Which was puzzled and troubled for a place for a nest."
"Now, brother," said Lena, "don't tell me a word,
Let me hunt for the nest of this crowded out bird."
So away they went roving o'er hill and through dell;—
Of the nests that they found 'twould take hours to tell.
There were nests in the orange trees, blossoming white,
There were nests in the coffee trees, glossy and bright,
There were nests in the hedges, the bushes and grass,
In the dark, hanging vines, by each roadside and pass.
There were blue eggs and speckled eggs, brown eggs and white,
And yellow throats opening with chirpings of fright.
"Search no longer," said Manuel, "'mid bushes and trees,
'Tis a stranger place, sister, than any of these."
"I give up," said Lena, a shade on her brow,
"Come, hasten, dear Manuel, I'll follow you now."
Then away to the garden the little feet sped,
And he showed her the nest in a big cabbage head!

—*Anna R. Henderson.*

Peach.

I. Order—Rosaceae.

II. Description.
- 1. Tree (8 ft. to 25 ft. high).
  - A. Branches—Irregular.
  - B. Leaves—Glossy and lanceolate or willow-like.
  - C. Blossoms—Light pink, appearing in spring.
  - D. Fruit.
    - a. Shape—Roundish drupe.
    - b. Size—1 in. to 3 in. in diameter.
    - c. Color—Downy reddish, yellowish, and whitish skin.
    - d. Seed—A furrowed, flattish stone.
    - e. Kind.
      - (a) Freestone (Fleshy part when ripe separates from seed).
      - (b) Cling-stone (Flesh does not separate).

PEACH FLOWER.

III. Where Found.
- 1. Native of Persia and Syria (Several species grow wild).
- 2. United States (Grown most extensively).
  - A. Southern shores of Great Lakes.
  - B. Central part of Mississippi valley.
  - C. Southern States.
  - D. Pacific coast.
- 3. Ontario and British Columbia.

IV. How Propagated (From seed).
- 1. Cultivated in orchards.

V. Annual Output (In United States 40,500,000 bu.).

VI. Use.
- 1. Eaten raw.
- 2. Dried.
- 3. Peach brandy.

VII. How Prepared for Market.
- 1. Gathered before quite ripe.
- 2. Placed in small baskets.
- 3. Shipped in refrigerator cars.

Questions on the Peach.

Is the peach tree a distinct genus, or is it allied to the almond, cherry, and plum? 2131.

What is the general height of the peach tree?

What is the color of its blossoms and which appears first, the leaves or its blossoms?

Of what country is the peach tree native?

When was it introduced into Europe?

What are the two principal classes of peaches?

How old must a peach tree be before it bears?

How many years have they been known to produce?

How is the peach tree propagated, from the seed or from cuttings?

Which provinces of Canada are best adapted to the cultivation of peach orchards.

Where are the most productive peach-growing regions in the United States?

What Southern State produces the most peaches and what is the annual yield in the number of bushels?

How many bushels of peaches are produced annually in the United States?

In what condition are peaches gathered for the market and how are they shipped?

What can you say about the keeping qualities of dried peaches?

Where is peach brandy usually made?

Pear.

PEAR FLOWER.

I. Family (Rose).
II. Description.
1. Native of Asia.
2. Tree.
A. Wild state—Small and thorny.
B. Cultivated—Thornless. '
a. Height (25 ft. to 60 ft.).
b. Diameter (Quite often 3 ft.).
c. Age (Usually live only a few years, but some have been known to live 300 years).
d. Wood—Hard and durable.
3. Leaves—Green and shiny on upper side.
4. Flower—White, resembling apple.
5. Fruit.
A. Resembles apple.
B. Shape—Irregularly conical with base of cone hanging down.
C. Pulp—When ripe, soft, sweetish, and delicious flavor.
III. How Propagated.
1. Grafting on quince, white thorn, and other trees.
2. Budded on seedlings of species called *free stocks.*
IV. Varieties (225).
1. Bartlett pear (90 per cent.).
2. Seckel pear.
V. Where Grown.
1. Practically every country in temperate and tropical zones.
2. United States.
A. California (first rank).
B. New York.
C. Ohio.
D. Michigan.
E. Indiana.
F. Pennsylvania.
3. Canada (Prolific producer of several fine grades).
VI. How Prepared for Market.
1. Picked before ripe.
2. Wrapped in separate papers.
3. Transported in refrigerator cars.
VII. Use.
1. Eaten raw.
2. For cooking.
3. Manufacture of wine.
4. Perry, or pear cider.
5. Wood used in manufacture of musical instruments, turners' tools, and wood engraving.
VIII. Annual Crop of the United States (3,500,000 bu.).

Questions on the Pear.

Of what continents is the pear a native? 2132.
Describe the wild pear tree and its fruit.
To what height will a pear tree grow?
How great a diameter does a pear tree attain in a favorable climate?

How many species of pear are recognized by writers at the present time? How many in Rome at the time of Pliny? 2132.

Would a pear tree planted at the time the Pilgrim Fathers landed at Plymouth Rock be capable of bearing fruit at the present time? 2133.

Name three uses of pear tree wood in manufacture.

What is the favorite pear on the American market?

What two states rank first in the production of pears?

The Bartlett pear constitutes what per cent. of the entire crop of the United States?

Which is the more valuable, the pear or the peach crop? 2131 and 2133.

What is pear cider generally called?

In what country is pear cider made in large quantities?

How many million bushels is produced annually in United States?

How are pears dried?

How are pears prepared for the market and shipped?

In what countries are they raised?

Are apples, pears, and quinces related in family? 2132 and 2355.

Why is the Japan quince cultivated?

What use is made of the quince fruit? 2133.

The River Path.

There's a path beside the river,
  Winding through the willow copse,
Where I love to walk in autumn
  Ere the season's curtain drops.

On far hillsides beech and maple,
  Touched by early nipping frost,
Have their brown and crimson jackets
  To the boisterous breezes tossed.

Still the willow leaves are clinging,
  Latest foliage of fall,
Shading yet my river pathway
  Underneath the osiers tall.

On the wimpling water's surface
  Drift a million truant leaves,
Stolen from the woodland reaches
  By the wind, the prince of thieves.

All along the river edges
  Verdure's turned to brown and gray,
Rustling through the dying sedges
  Autumn's low voiced breezes play.

Nowhere sweeter walk or rarer
  Than my path beside the stream.
There I love to stroll in autumn,
  There to loiter and to dream.

—Frank Farrington.

Pigeon.

I. ORDER—Columbae.
1. Species (Over 500).

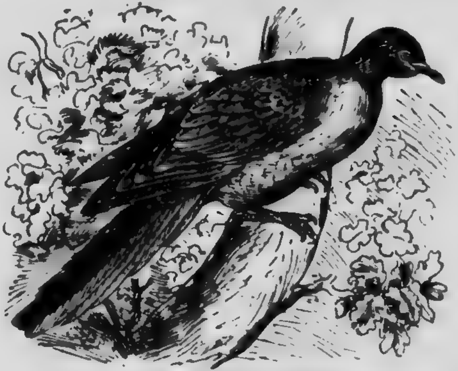
II. DESCRIPTION.
1. Body—Heavy. 2. Legs—Short. 3. Head—Small.
4. Wings—Large, strong in flight.
5. Bill—Short, straight, and compressed (Though upper mandible may be slightly curved at tip).
6. Nostrils—Protected by a fleshy scale.
7. Color.
A. Temperate regions—Dull gray, brown, or slate, though some are black and white.
B. Tropical regions—Bright shades of blue and purple.

III. CLASSIFICATION.
1. Wild pigeons.
A. Gouras.
(a) Found in Papua.
(b) Length—2 ft.
(c) Large and showy crests and rich color.
B. Passenger.
(a) Formerly found in great numbers in Northern United States—Almost exterminated by hunters.
(b) Length—15 in.
(c) Plumage—Finely tinted.
(d) Tail—Long and pointed in shape, feathers tapering in regular order.
(e) Formerly migrated in communities of millions.
(f) Nests—Sometimes hundreds in one tree.
C. Mourning Pigeon (Or turtle doves).
(a) Length (10 in.).
(b) Color (Grayish brown).
(c) Nest (Built of twigs).
(d) Eggs (Two—Cream white color).
(e) Hatching (Male and female alternate sitting on nest).
(f) Peculiar characteristics (Cooing and affection for mate).
(g) Other species.
Carolina turtle dove.
Collared turtle dove.
2. Domesticated Pigeons.
A. Fantail.
a. Description (Tail large, erect; opens like a fan).
B. The Carrier, or Homing, Pigeon.
a. Description.
(a) Size (Large).
(b) Beak (Base of—naked).
(c) Wings (Long).
(d) Eyes (Surrounded by circle of naked skin).
(e) Commercial use (For carrying letters or messages).
(f) Flight (Rate, 30 miles per hour). (Distances, from 200 to 1,000 miles).
C. The Pouter.
a. Peculiar power (To swell crop to a very large size).
D. Jacobins.
a. Distinguishing characteristics (Big ruff of feathers about the neck and head).
E. Tumblers.
a. Peculiar habit (Turn somersaults in the air).

b. Beauty and price (Handsome, high price).
F. Runt.

IV. HABITS.
1. Perch in trees.
2. Build nests on some elevated spot.
A. Domestic pigeons breed in barns.
B. Both male and female sit on eggs.
3. Pair for life.
4. Young at hatching.
A. Blind, naked, and helpless.
B. Fed masticated food from crop of parents.

V. WHERE FOUND.
1. Widely distributed, though most abundant in tropical regions.
2. Pigeon culture important in India, China, Persia, Belgium, and Holland.



PASSENGER PIGEON.

The Mother-Dove.

High on the top of an old pine-tree
Broods a mother-dove with her young ones three
Warm over them is her soft downy breast,
And they sing so sweetly in their nest.
"Coo," say the little ones, "Coo," says she,
All in their nest on the old pine-tree.

Fast grow the young ones, day and night,
Till their wings are plumed for a longer flight,
Till unto them at last draws nigh
The time when they all must say "Good-bye."
Then "Coo," say the little ones, "Coo," says she,
And away they fly from the old pine-tree.

Questions on the Pigeon.

What can you say about the distribution of pigeons? In what climates are they most abundant? 2212.

Do pigeons build their nests in trees?

What can you say of their variety of color and habits?

Where does the domestic pigeon breed?

What can you say about the mating of pigeons?

Do male and female birds both sit on the eggs? Is this common with other kinds of birds?

How do they differ in this respect from the ostrich? 2212.

Name nine kinds of pigeons?

Describe the passenger pigeon.

What are the chief articles of food of pigeons?

In what countries is pigeon culture an important industry?

From what bird is the domestic pigeon supposed to be a descendant?

What is the object in rearing pigeons from a financial standpoint?

Are turtle doves related to pigeons?

Describe the turtle dove. 2916.

How many miles an hour does the carrier pigeon fly? 492.

What is the best distance record ever made by American homing pigeons?

Why do they wash the carrier pigeon's feet with vinegar?

How is the message attached to the carrier pigeon?

How are they trained for service?

Tell how Joshua in Bible times made use of the carrier pigeon. 491.

What nation first made use of the carrier pigeon?

During the siege of Paris by the German army, in 1870 and 1871, how many thousand official messages were carried into the city by means of pigeons?

In what countries do they use the trained carrier pigeons in national games?

Rabbit.

I. RODENTIA.

II. DESCRIPTION.
  1. Native of temperate climates.
  2. Ears—Long.
  3. Teeth—Incisors, large, curved, and very sharp.
  4. Legs—Hind legs powerfully developed.
  5. Toes—5 on fore feet; 4 on hind feet.
  6. Color.
    A. Native state—Brown.
    B. Domestication — Varied, including black, white, gray, spotted.
  7. Life—Average 6 to 7 years.

III. HABITS.
  1. Gregarious and in wild state pairs for life.
  2. Haunts—Sandy pastures and hilltops. Remains concealed during the day and roams around at night.
  3. Young.
    A. Brought forth in litters.
    B. Blind and naked at birth.
    C. Mother cares carefully for them in burrows.
  4. Breeding—Age of 6 months.
    A. Several litters a year.

IV. CHARACTERISTICS.
  1. Timidity—Seeks safety by rapid and continuous running.
  2. Senses—Well developed.
  3. Very prolific.
    A. Pest in some countries.

V. CLASSES (Several species).
  1. Cottontail, or gray, rabbit.
  2. Dark rabbit (Western states).
  3. Domesticated rabbits.
    A. Albino or white rabbit (White hair and pink eyes).

VI. WHERE FOUND.
  1. North America, especially Mississippi Valley and Southern Canada.
  2. Australia (Domesticated).

VII. FOOD.
  1. Grass.
  2. Herbage.
  3. Vegetables.
  4. Bark (Often damaging young plants and orchards).

VIII. USE.
  1. Food.
  2. Hair—For felting purposes.
  3. Skin—In making glue.
  4. Fur—For making caps.

GRAY RABBIT

Questions on the Rabbit.

Where is the rabbit supposed to have originated? 2359.
Give the distinguishing features of the rabbit and the hare.
How does the rabbit seek safety from its enemies? 2360.
What use is made of the rabbit fur?
From what part of the rabbit is glue and size made?
In what way are rabbits an injury to orchards?
When is the best time to go rabbit hunting?
In what countries have rabbits become a pest?
At what season of the year is rabbit flesh the best for eating? Give reason.
Describe the cottontail.

Describe the Jack rabbit. 1428.
Which is the larger, a Jack rabbit or a Norwegian hare?
What is the color of Jack rabbits in the winter? In the summer?
Where are Jack rabbits found? 1428.
Is the Jack rabbit a hare? 1252.
Describe the polar hare of North America.
What can you say about their food and their habits?
What use is made of the fur of the hare?
What can you say about the voice of the hare?
Of what continent are they a native?
About how many young do they produce and how many litters per year? 2360.
Where do rabbits stay during the daytime?
Which has the longer ears, a hare or a rabbit? 2359.
Which can run the faster, the hare or the rabbit?

The Timid Rabbit.

Of all the beasts he learned the language,
Learned their names and all their secrets,
How the beavers built their lodges,
Where the squirrels hid their acorns,
How the reindeer ran so swiftly,
Why the rabbit was so timid,
Talked with them whene'er he met them,
Called them "Hiawatha's Brothers."

* * * * * * *

And the rabbit from his pathway
Leaped aside, and at a distance
Sat erect upon his haunches,
Half in fear and half in frolic,
Saying to the little hunter,
"Do not shoot me, Hiawatha."

--*Longfellow.*

The Hare and the Tortoise.

A Hare one day ridiculed the slow pace of the Tortoise, and boasted of his own speed in running.

The Tortoise said, "Let us try a race. I will run with you five miles, and our friend the Fox may act as judge."

"All right," said the Hare, and away they went together. The Tortoise jogged along with a slow and steady pace to the end of the journey.

The Hare first outran the Tortoise, then fell behind and began to nibble at the grass and to play hide and seek with other hares. Finally he became tired with play and lay down for a nap, saying, "If the Tortoise should get ahead of me I could catch up with her and pass her without the least trouble." The Hare woke up but the Tortoise was not in sight; and running as fast as he could he found her at her goal fast asleep, while the Fox stood waiting to tell the Hare he had lost the race.

—*Aesop's Fables.*

Robin, or Robin Redbreast.

I. Species.
    1. American—Thrush.
    2. European—Warbler.
  A. Native home—Europe.
  B. Origin of name—Red breast of male.
  C. Kinds.
    1. Robin redbreast.
    2. Golden robin.
  D. Migration (Summer bird of passage).
    1. Winter home—South.
    2. Summer home—Northern states and Canada.

ROBIN REDBREAST. GOLDEN ROBIN.

II. Description.

A. American.	European.
1. Size—10 in. long.	1. 6 in. long.
2. Shape—Plump.	2. Round, plump.
3. Color—Black head and back, orange breast.	3. Olive brown body, reddish-orange breast.
B. Family—Perchers.	
1. Broods—2 per season.	1. 2 each season.
2. Number of young—4 to 6.	2. 5 to 7.
C. Nest.	
1. Where built (Trees, rafters, etc.).	1. Bushes, ivy wall, and vines.
2. Material—Grasses, reeds, mud, and hair.	2. Moss, leaves, dried grass, and hair.
D. Eggs.	
1. Number—4 to 6.	1. 5 to 7.
2. Color—Greenish blue.	2. White spotted with reddish brown.
3. Size—⅝ in. in diameter.	3. Smaller.

  E. Food.
    1. Worms. 2. Insects.
    3. Small fruit, especially cherries.
    4. Crumbs.

III. Characteristics.
    1. Travel in pairs rather than in flocks.
    2. Return to same nest of previous season.
    3. Familiar and friendly.
    4. Have pleasant voice and sweet song.

The Robin Redbreast.

Art thou the bird that man loves best,
The pious bird with the scarlet breast,
  Our little English robin:
The bird that comes about our doors
  When autumn winds are sobbing?
Art thou the Peter of Norway boors?
  Their Thomas in Finland,
  And Russia far inland?
The bird that by some name or other
All men who know thee call thee brother?

—*Wordsworth.*

The Robin's Return.

Robin on the tilting bough,
Redbreast rover, tell me how
You the weary time have passed
Since we saw and heard you last.

"In a green and pleasant land,
By a summer sea-breeze fanned,
Orange trees with fruit are bent,—
There the weary time I've spent."

Robin, rover, there, no doubt,
Your best music you poured out;
Piping to a stranger's ear,
You forgot your lovers here.

"Little lady, on my word,
You do wrong a true-hearted bird!
Not one ditty did I sing,
'Mong the leaves or on the wing,

"In the sun or in the rain;
Stranger's ears would list in vain,
If I ever tried a note,
Something rose up in my throat.

"'Twas because my heart was true
To the North and springtime new;
My mind's eye, a nest could see
In yon old, forked apple tree!"

—Edith Thomas.

The Four Seasons.

First Pupil:
Robins in the tree top,
  Blossoms in the grass,
Green things a-growing,
  Everywhere you pass;
Sudden little breezes,
  Showers of silver dew,
Black bough and bent twig
  Budding out anew;
Pine tree and willow tree,
  Fringed elm and larch—
Don't you think that May time's
  Pleasanter than March?

Second Pupil:
Apples in the orchard
  Mellowing one by one;
Strawberries upturning
  Soft cheeks to the sun;
Roses faint with sweetness,
  Lilies fair of face,
Drowsy scents and murmurs
  Hunting every place;
Lengths of golden sunshine,
  Moonlight bright as day,
Don't you think that summer's
  Pleasanter than May?

Third Pupil:
Roger in the corn patch,
  Whistling negro songs;
Pussy by the hearthside
  Romping with the tongs;
Chestnuts in the ashes
  Bursting through the rind;
Red leaf and gold leaf
  Rustling down the wind;
Mother "doin' peaches"
  All the afternoon—
Don't you think that autumn's
  Pleasanter than June?

Fourth Pupil:
Little fairy snowflakes
  Dancing in the flue;
Old Mr. Santa Claus,
  What is keeping you?
Twilight and firelight,
  Shadows come and go;
Merry chime of sleighbells
  Tinkling through the snow;
Mother knitting stockings,
  (Pussy's got the ball)—
Don't you think that winter's
  Pleasanter than all?

—T. B. Aldrich.

Questions on the Robin.

To what continents is the robin native? 2429.

By what name is it familiarly known? Why so named?

Name some characteristics which make the robin a favorite.

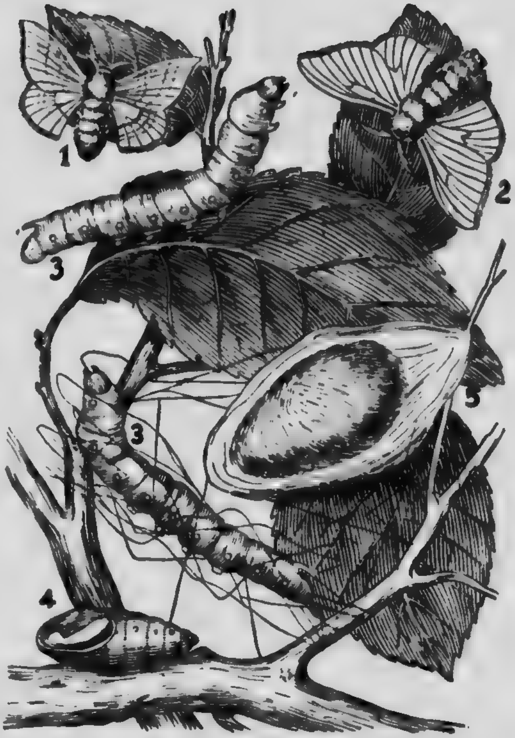
Note the difference in color between the male and female.

Name some distinguishing features between the American and the European robin.

When and where do the robins migrate?

What is meant by the robin being a "percher"?

Silkworm.



SILKWORM.

1, Male Moth; 2, Female Moth; 3, 3, Silkworms; 4, Chrysalis; 5, Cocoon.

I. FAMILY—Bombycidae.
  1. Species (About 400).
II. SILK MOTH.
  1. Description.
    A. Body — Thick and hairy.
    B. Length — Mature state 1 in.
    C. Legs—Stout.
    D. Wings — Large, marked with dark lines.
    E. Body of female larger than male.
    F. Both die after deposit of eggs.
III. SILKWORM.
  1. Eggs (300 to 500 in number).
  2. Where placed.
    A. Wild state—Leaves of mulberry tree.
    B. Silk culture — On pieces of paper or muslin.
  3. Conditions necessary for hatching.
    A. Temperature of 80° F.
    B. Room clean.
    C. Good ventilation.
  4. Caterpillar.
    A. Early appearance—8 or 10 days.
    B. Body—Parts.
      a. 12 segments.
      b. 6 anterior or fore legs.
      c. Ten fleshy hind legs.
      d. Large mouth with powerful jaws.
    C. Stages of development.
      a. Caterpillar state from 6 to 8 weeks.
      b. Skin changes four times (Casting).
      c. Body assumes an ashy color.
      d. Length—3 in.
      e. Food — Mulberry leaves.
      f. Ceases eating fifth week.
      g. Spinning of cocoon.
  5. Cocoon development.
    A. Place of attachment.
      a. Wild state—Mulberry leaves.
      b. Artificial state—Cells.
    B. How attached—By hind legs.
    C. How made—By throwing silk threads.
    D. Threads.
      a. Glutinous substance.
      b. Secreted by two tubular glands. Location (On each side body, near head, connected with spinneret).
      c. Length.
        200 to 300 yards.
      d. Nature.
        Consists of two strands.
    E. Time of spinning.
      a. 3 to 5 days.
    F. Preparation for pupa stage.
  6. Chrysalis state.
    A. Hatching.
      a. Time required — 3 weeks.

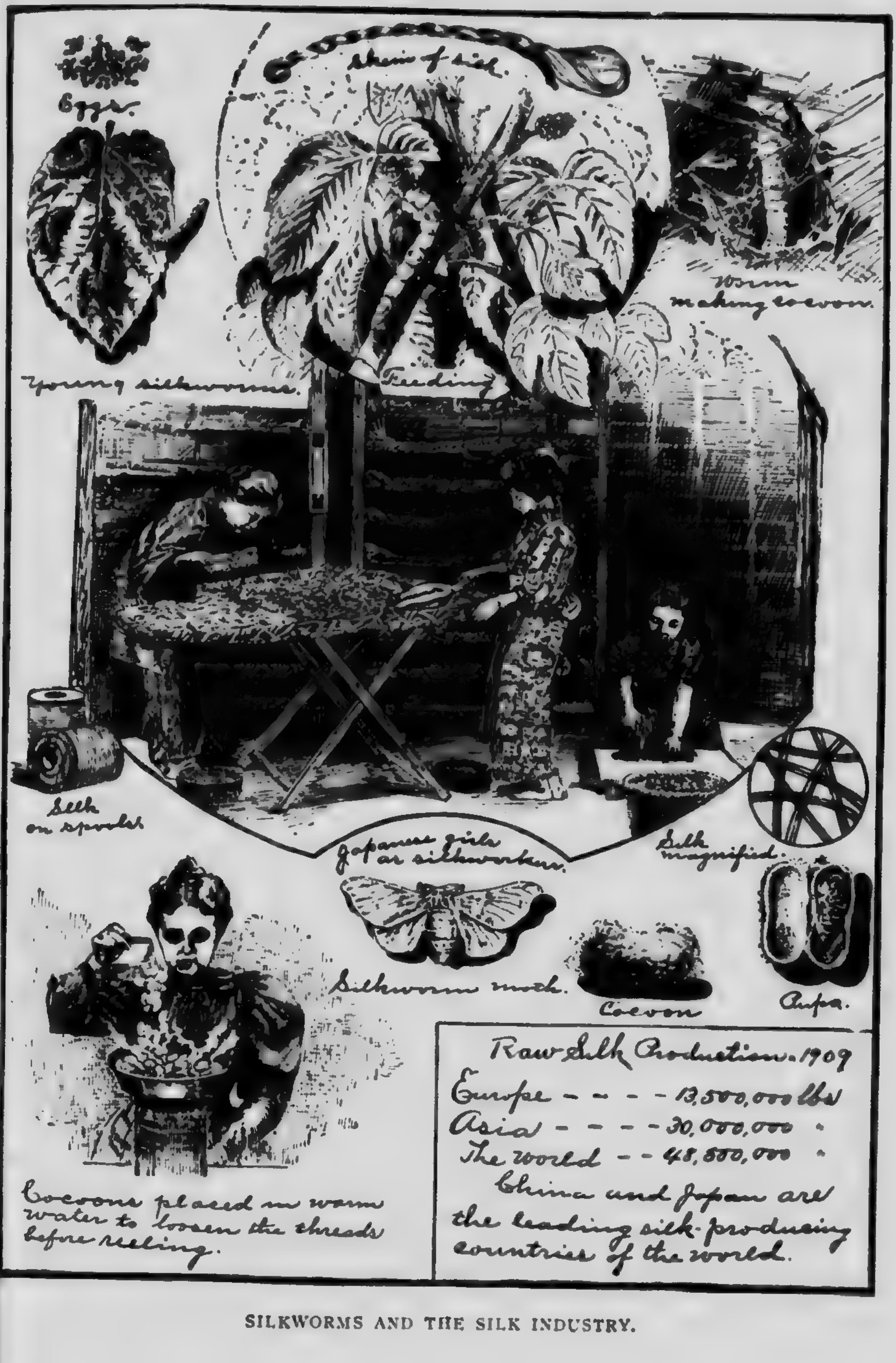
- **b.** **Prevention of hatching.**
  By placing in hot water, or warm oven.
- c. Cocoons necessary for 1 lb. of raw silk—12.

IV. MANUFACTURE.
- 1. Placing in hot water kills moth and softens gum.
- 2. Unwinding of cocoon.
  - A. Outside cocoon floss silk.
  - B. Inside finest silk.
- 3. Reeling silk.
- 4. Raw silk.
  - A. Washing.
  - B. Winding on bobbins.
  - C. Assortment.
- 5. Throwing.
  - A. Unwinding from bobbins.
  - B. Twisting on machine.
  - C. Wound on reel.
  - D. Preparing threads for spinning.
    - a. Singles for plain silk and ribbons.
    - b. Double twisted in making warps (Tram silk).
    - c. Organzine (Twisted like a rope).
  - E. Dyeing raw silk.
  - F. Waste products (1/8 of cocoon).
    - a. Formerly considered useless.
    - b. Process discovered, in 1857, by which these products are utilized (Spin silk).
- 6. Weaving.
  - A. Power looms in United States and Canada.
  - B. Hand looms in Europe (Usually).
  - C. Hand looms entirely (China).
  - D. Manufacture of sewing silk.
    - a. Continuation of throwing.
    - b. Made by continuation of twisting of threads.
    - c. Process confined to America.

V. HISTORY.
- 1. Originated in China.
  - A. First cocoon unwound, 2600 B. C.
- 2. Introduced into Europe.
  - A. Carried by Persian monks 530 B. C.
  - B. Edict of Nantes.
- 3. Introduced into America.
  - A. Attempt by James I., into Virginia.
  - B. Introduced in South Carolina, Florida, California, and New Jersey, in 1850.

VI. COUNTRIES.
- 1. Raw silk.
  - A. China.
  - B. Japan.
  - C. Italy.
  - D. France.
- 2. Where manufactured.
  - A. France.
  - B. United States.
    - a. 650 silk factories.
    - b. Annual value $115,526,500.
    - c. One-third raw silk manufactured here.
- 3. Germany.
- 4. Switzerland.

VII. ARTIFICIAL SILK.
- 1. Made of cellulose prepared from cotton and pulps of soft wood.
  - A. Cotton carded.
  - B. Treated with nitric and sulphine acid.
    - a. 15 parts nitric acid.
    - b. 85 parts sulphine acid.
  - C. Converted into nitrocellulose.
    - a. Clear blue color.
  - D. Pressed and carefully washed.
  - E. Collodion.
    - a. Dissolving in ether and alcohol.
  - F. Run between steel rollers
  - G. Forced through tubes into nitric acid.
  - H. Fibers reeled.
  - I. Dried by warm air.
  - J. Washing and drying.
  - K. Spun and dried.


Eggs.
Skein of silk.
Worm making cocoon.
Young silkworms.
Feeding.
Silk on spools.
Japanese girls as silkworkers.
Silk magnified.
Silkworm moth.
Cocoon
Pupa.

Cocoons placed in warm water to loosen the threads before reeling.

Raw Silk Production. 1909

Europe - - - - 13,500,000 lbs
Asia - - - - 30,000,000 "
The world - - 48,500,000 "

China and Japan are the leading silk-producing countries of the world.

SILKWORMS AND THE SILK INDUSTRY.

The American Silk Worm.

The American silkworm is a large moth of a buff color, whose caterpillar feeds upon the leaves of many trees, such as the oak, maple, apple, willow, hickory, and sycamo The cocoon is formed of strong silk, which has a glossy fiber when it is unwound. It generally fastened to a leaf or to several leaves, with which it sometimes falls to t ground. A gummy substance cements the fibers together and when d [illegible] gives the coco a chalky appearance The gummy substance is softened for reeling by soaking in wa water. This insect has two generations per year in the Southern States and passes the winter in the chrysalis state.

Questions on Silk and the Silkworm.

From what country is one-half of the raw silk obtained? 2636.

Of what material is artificial silk made?

How does the price of artificial silk compare with that of real silk?

Who is credited with unwinding the first silk cocoon 2600 B. C.? 2635.

What people carried the eggs of the silkworm in hollow canes from China to Constantinople about 530 A. D.?

What king first sent silkworm eggs to Virginia and offered rewards for the production of raw silk?

What is the color of raw silk?

Tell how to unwind the silk cocoon. What is floss silk?

In what country did the manufacture of silk originate?

What effect did the Edict of Nantes have upon the silk industry of France?

From what cities do we obtain most of our imported silk goods?

About what proportion of the raw silk produced in the world is handled by the mills of the United States?

About how many species of the silkworm are there?

How many eggs does the silk moth produce?

How many pounds of cocoons are required to produce a pound of raw silk?

How many silk factories are there in the United States at the present time and what is the value of their annual output?

Which is the larger, the male or the female silkworm?

How do the eggs of the silkworm compare in size with the mustard seed?

How long do they remain in the caterpillar stage and how many times does their skin change during this period?

How many legs has a caterpillar?

Tell how they spin the silk thread.

How is the moth killed in the cocoon?

How many pounds of raw silk are produced in the world annually?

What part of the silkworm is used in the manufacture of fish lines? 2637.

Give reasons why silk is more expensive than cotton.

Name five articles made from silk.

What temperature is necessary to hatch the silkworm egg and what time required?

Upon what do the caterpillars feed?

When do they begin to spin their cocoons? How long does this take?

Which is the better quality, artificial or natural silk? Give reasons.

Spider.

I. Class—Arachnida.
  An animal (Sometimes called insect).

II. Description.
- 1. Body—2 segments.
  - A. 1. Head; eyes (8).
    - 2. Chest — Breathes through lung sacs.
  - B. Abdomen.
    - 1. Structure.
      - a. Tubes.
      - b. Fluid.
      - c. Thread.
  - C. Legs—8, in 4 pairs.
    New limbs may grow again when others are destroyed.
  - D. Mandibles.
    - 1. Hooked.
    - 2. Use.
    - 3. Fluid.
  - E. Color—Various (Often same as leaves, bark, or petals of flowers where they occur).
  - F. Size—From minute size to several inches in diameter.
  - G. Shape—Same at birth as when adult.
    Skin changes 6 or 9 times.
- 2. Food.
  - A. Kinds.
    - 1. Flies.
    - 2. Birds.
    - 3. Small reptiles.
      Suck juices from prey.
  - B. How obtained.
  - C. Manner of poisoning.
- 3. Eggs.
  - 1. Number (From 50 to 2,000).
  - 2. Where laid (Silk cocoon).
  - 3. Hatching.
- 4. Webs, or Nests.
  - 1. Construction.
  - 2. By which made (Usually the female).
  - 3. Kinds.
  - 4. Use.
  - 5. Where made.
    - a. Plants.
    - b. Buildings.
    - c. Water.
    - d. Under ground.
- 5. Habits.
  - 1. Fighting.
  - 2. Hiding.
  - 3. Leaping.
  - 4. Running.
  - 5. Swimming.

III. Species.
- 1. House.
- 2. Garden.
- 3. Water.
- 4. Trapdoor.
- 5. Tropical.
- 6. Tarantula.

Questions on the Spider.

Name three ways in which spiders differ from insects. 707.
Which senses are most highly developed?
Give the construction of the second segment.
Compare the male and female in size and strength.
Describe the web-making process.
What may be said regarding the parental attitude of spiders?
What animals are enemies of spiders?
How great are the poisonous effects of spiders?
Where is the home of the tarantula?
In what regions are spiders found in greatest number and of largest size?
Why are the trapdoor spiders so called?
Describe the home of the water spider.
How are the young of the scorpion cared for? 2561.

Squirrel.

I. Class—Mammalia.
  1. Order — Rodentia (Gnawing animals).

II. Characteristics.
  1. No canine teeth.
  2. Two powerful incisors.
  3. Molar teeth flat.
  4. Motion of jaw backward and forward.
  5. Body slender.
  6. Bright eyes.
  7. Ears small and pointed.
  8. Tail long and bushy.
  9. Hind feet have 5 toes.
  10. Front feet 4 toes and a thumb-like projection.

III. Groups.
  1. Tree Squirrels.
    A. Ruddy-brown color upper parts.
    B. Reddish white below.
    C. Color varies with season, generally grayish in the winter.
    D. Live in trees.
    E. Food — Nuts, seeds, acorns.
    F. Flesh valued as food.
  2. Ground Squirrels.
    A. Species.
      (a) Gray, striped, red.
    B. Home in burrows in ground.
    C. Food — Seeds, tender shoots of plants, cereals.
    D. Pest to cornfields in central west.
  3. Flying Squirrels.
    A. Extension of skin connecting fore and hind legs forming a parachute.
    B. Flying motion.
    C. Roam at night and seen little in daytime.

IV. Where Found.
  1. Tree squirrels—In forests of North America and most other continents.
  2. Ground squirrels—Both timber and prairie regions.
  3. Flying squirrels — Western Asia, North America, Siberia, Eastern Europe.

V. Use.
  1. Fur.
  2. Food.
  3. Pets.

TREE SQUIRRELS.

Questions on the Squirrel.

What continent has no squirrels? 2719.
How many toes has a squirrel on its fore feet? On its hind feet?

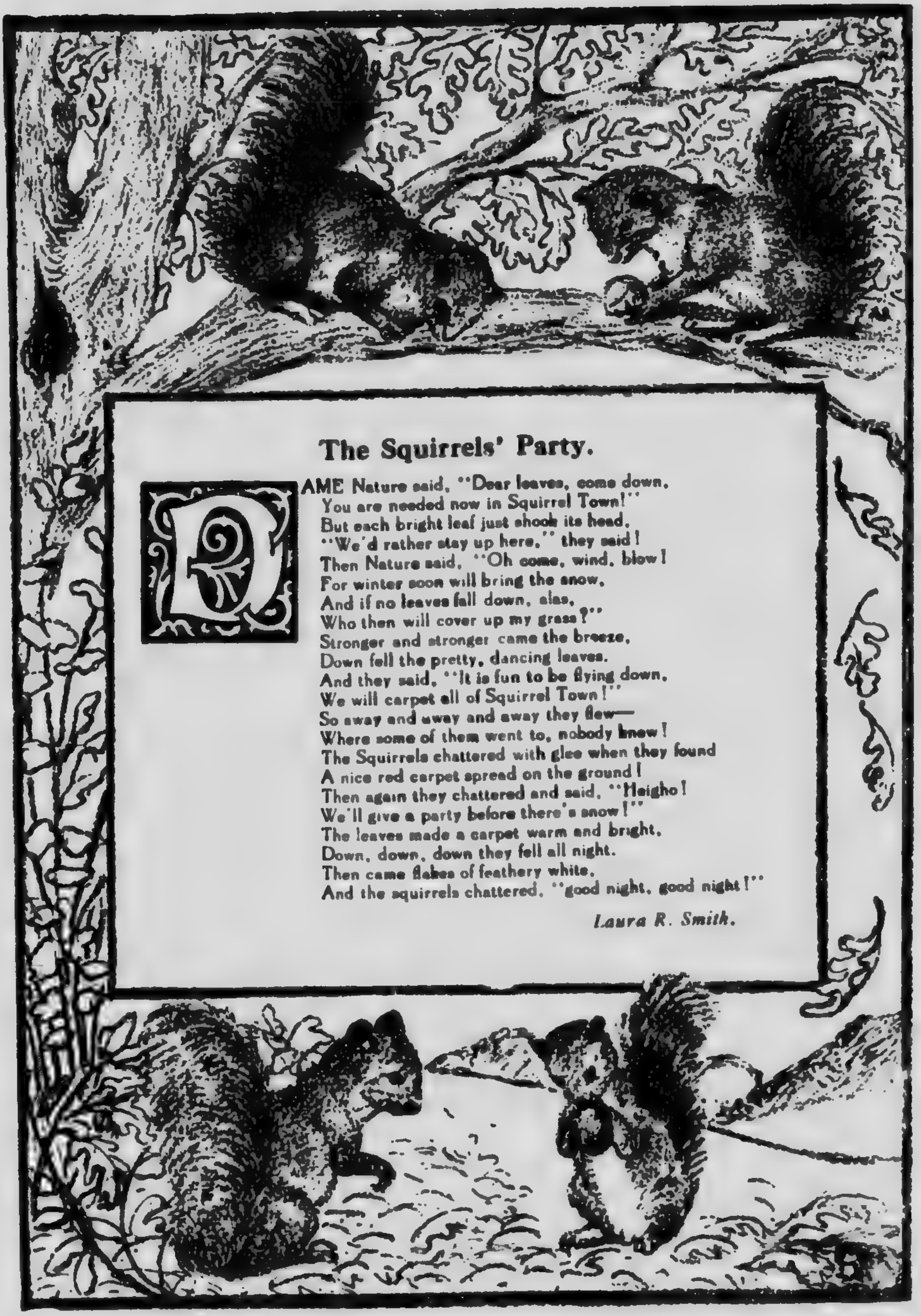
In what countries are flying squirrels found? 2720.
Do they roam about in the daytime or at night?
Why are ground squirrels harmful to farmers?
In what country do we find the best fur-bearing squirrels?
Name three kinds of ground squirrels and describe them. 2719.
What kind of squirrels produces the best meat?
What is the effect of the change of seasons on the color of the squirrels?
What do the squirrels do in the cold weather of winter?
What do they eat? How do they provide food for the winter?
In what countries are tree squirrels most abundant?

The Squirrel.

In the joy of his nature he frisks with a bound
To the topmost twigs, and then down to the ground;
Then up again, like a winged thing,
And from tree to tree with a vaulting spring;
Then he sits up aloft, and looks waggish and queer,
As if he would say, "Ay, follow me here!"
And then he grows pettish, and stamps his foot;
And then independently cracks his nut.
—*Mary Howitt.*

The Hunted Squirrel.

Then as a nimble squirrel from the wood
Ranging the hedges for his filbert food
Sits pertly on a bough, his brown nuts cracking
And from the shell the sweet white kernel taking;
Till with their crooks and bags a sort of boys
To share with him come with so great a noise
That he is forced to leave a nut nigh broke,
And for his life leap to a neighbor oak,
Thence to a beech, thence to a row of ashes;
Whilst through the quagmires and red water plashes
The boys run dabbing through thick and thin.
One tears his hose, another breaks his shin;
This, torn and tattered, hath with much ado
Got by the briars; and that hath lost his shoe,
This drops his band; that headlong falls for haste;
Another cries behind for being last;
With sticks and stones and many a sounding holloa
The little fool with no small sport they follow,
Whilst he from tree to tree, from spray
Gets to the woods and hides him in his dray.
—*William Browne.*



The Squirrels' Party.

DAME Nature said, "Dear leaves, come down,
You are needed now in Squirrel Town!"
But each bright leaf just shook its head,
"We'd rather stay up here," they said!
Then Nature said, "Oh come, wind, blow!
For winter soon will bring the snow,
And if no leaves fall down, alas,
Who then will cover up my grass?"
Stronger and stronger came the breeze,
Down fell the pretty, dancing leaves.
And they said, "It is fun to be flying down,
We will carpet all of Squirrel Town!"
So away and away and away they flew—
Where some of them went to, nobody knew!
The Squirrels chattered with glee when they found
A nice red carpet spread on the ground!
Then again they chattered and said, "Heigho!
We'll give a party before there's snow!"
The leaves made a carpet warm and bright,
Down, down, down they fell all night.
Then came flakes of feathery white,
And the squirrels chattered, "good night, good night!"

Laura R. Smith.

BLACKBOARD LESSON.

Tea.

LEAVES AND FLOWERS OF TEA.

- I. FAMILY—Allied to Camellia.
- II. SPECIES.
  - 1. Several (Ranging from 4 ft. to 30 ft. in height).
    - A. Tea shrub or Chinese tea (Most important).
- III. DESCRIPTION.
  - 1. Shrub.
    - A. Height.
      - (a) Wild state (20 ft. to 30 ft.).
      - (b) Cultivated for commerce (5 ft. to 6 ft.).
    - B. Leaves.
      - (a) Length (2 in. to 6 in.).
      - (b) Shape (Lanceolate).
    - C. Flowers.
      - (a) Color (White).
- IV. PROPAGATION.
  - 1. From seed.
  - 2. Ready for picking (3 years of age).
  - 3. Best results secured (8 years to 10 years of age).
- V. DISTRIBUTION.
  - 1. Range (From 39° north, in Japan, to regions south of Equator); Java, Australia, South Africa, Southern Brazil.
  - 2. United States—South of line extending from California to South Carolina.
- VI. HARVESTING
  - 1. Leaves picked by hand.
  - 2. First crop gathered in April.
  - 3. Second crop gathered a month later (Most valuable).
    - A. Different grades.
      - (a) Hyson (Spring crop).
      - (b) Pouncheng (Wrapped tea).
      - (c) Souchong (Small kind).
  - 4. Process of curing.
    - A. Green Tea.
      - (a) Made by drying leaves quickly in pan immediately after picking.
      - (b) Rolled on table.
      - (c) Dried a second time.
      - (d) Varieties.
        - Hyson.
        - Young Hyson.
        - Hyson Skin.
        - Gun Powder.
        - Imperial.
        - Caper.
    - B. Black Tea.
      - (a) Drying leaves in shallow baskets.
      - (b) Saccharine fermentation.
      - (c) Roasted in iron vessel.
      - (d) Dried over charcoal fire.
      - (e) Varieties.
        - Pekoe.
        - Flowery Pekoe.
        - Orange Pekoe.
        - Pekoe Souchong
        - Congou.
        - Bohea.
        - Souchong.
- VII. HISTORY.
  - 1. Discovered by Chinese in 2737 B. C.
  - 2. Carried to Japan in 13th century.
  - 3. Dutch established plantation in Java in 1825.

4. Later established in Ceylon, West Indies, South America, Australia, Southern Europe.

VIII. CONSTITUENTS.

1. Volatile oil, theine, tannin, albuminoids.
2. Soluble mineral matter (Phosphoric acid and potash).

Tea in Literature.

Love and scandal are the best sweeteners of tea.

—*Fielding.*

The gentle fair on nervous tea relies,
Whilst gay good-nature sparkles in her eyes;
An inoffensive scandal fluttering round,
Too rough to tickle, and too light to wound.

—*Crabbe.*

Tea! thou soft, thou sober sage, and venerable liquid;—thou female tongue-running smile-soothing, heart-opening, wink-tippling cordial, to whose glorious insipidity I owe the happiest moments of my life, let me fall prostrate.

—*Cibber.*

Questions on Tea.

What is the height of the tea plant? 2829.

What is the most important species of the tea shrub or tree?

What is its height in cultivation?

What is the length of the leaves? What is the color of the flower?

How is it propagated? 2829.

How old must it be before the leaves are picked?

At what age does the tea plant yield the best?

What can you say of the tea as to its climatic range?

What grain covers a wider scope?

Why is it not raised in the United States, although the climate is favorable?

In what states is the tea plant grown with profit?

What countries produce the greatest amount of tea?

How are the leaves gathered?

When is the first crop picked?

How long before the second crop is picked?

How many crops are picked in a year?

Which crop is the most valuable?

What is Hyson tea? When is it picked?

Are black and green tea both secured from the same plant?

Tell how green tea is made. How black tea is made.

What are some of the kinds of green tea?

How is tea adulterated?

May all the grades of tea be prepared from the same plant?

How is tea classified as to its flavor and who are employed for that purpose?

What is the active principal of tea?

To whom do Chinese writers ascribe the discovery of the virtues of tea and when did he reign?

Woodpecker.

- I. Order—Picariae.
- II. Species (About 350).
- III. Description.
  - 1. Bill—Long, straight, and angular for perforating bark of tree.
  - 2. Tongue.
    - A. Long, slender, and armed with barbed, horny point.
    - B. Capable of thrusting tongue out and spearing insects.
    - C. Covered with sticky, shiny substance.
  - 3. Body somewhat slender.
  - 4. Tail quite stiff (Spine enables them to climb).
  - 5. Skilled in discovering holes of insects in trees.
  - 6. Tapping.
  - 7. Plumage.
    - A. Beautiful, usually having bright mark of red, yellow, or green at head and wings.
- IV. Species.
  - 1. Ivory billed.
    - A. Length (20 in.).
    - B. Alar extent (30 in.).
    - C. Color—Black and white; male with bright red crest.
    - D. Nest in hollow trees.
  - 2. Red-headed.
    - A. Length (10 in.).
    - B. Head—Red.
    - C. Found in North America, Atlantic to Rocky Mountains.
  - 3. California woodpecker.
    - A. Food—Acorns.
    - B. Found along the Pacific coast.
  - 4. Sap sucker.
  - 5. Species native to Europe.
    - A. Great spotted woodpecker.
    - B. Green woodpecker.
  - 6. Asiatic hornbill.

The Woodpecker.

How does he know where to dig his hole,
The woodpecker there, on the elm-tree pole?
How does he know what kind of a limb
To use for a drum or to burrow in?
How does he find where the young grubs grow—
I'd like to know?"

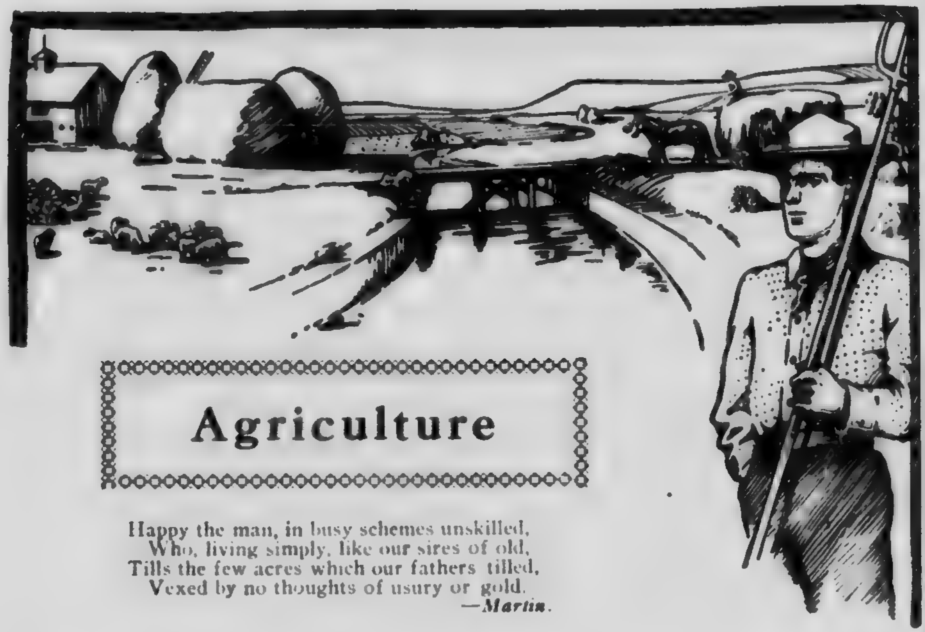
Away to the pear tree, out of sight,
With a cheery call, and a jumping flight!
He hopped around until he found a stub
"Ah, here's the place to look for a grub!
'Tis moist and dead—rrrrr rub-dub-dub.'

"I see," said the boy. "Just a rap or two,
Then listen as any bright boy might do.
You can tell ripe melons and garden stuff
In the very same way—It's easy enough."

—*William J. Long.*

Questions on the Woodpecker.

Why is the woodpecker so named? 3179.
Is it a bird of beautiful plumage?
To what division of birds does it belong? 298.
What species of woodpecker is found on the Pacific coast?
Where are the nests usually built? How many eggs are laid?
In what way is the horny point of the tongue an advantage?
Name and describe five species of woodpeckers.
What causes the woodpecker to make a tapping noise in the forest?
What species of woodpecker is found most commonly in North America?



Agriculture

> Happy the man, in busy schemes unskilled,
> Who, living simply, like our sires of old,
> Tills the few acres which our fathers tilled,
> Vexed by no thoughts of usury or gold.
> —*Martin.*

THE cultivation of useful plants as a means of supplying the needs and luxuries of mankind is the oldest and one of the most important occupations. Indeed, land is the source of all wealth and its care and cultivation constitute important enterprises. The field, the garden, and the forest are the three divisions in which agricultural labor is done, giving rise to the arts of *agriculture*, *horticulture*, and *forestry*. Modern farming, as it is managed at present, includes two general divisions, those of *plant production* and of *animal raising*.

Agriculture is fundamentally utilitarian, since the products as an aggregate supply human wants. On the other hand, horticulture yields a large quantity of luxuries, although the raising of vegetables, which is properly a branch of horticulture, is concerned very largely with supplying materials for the table. Horticulture and forestry, although distinctive arts, become closely related in *landscape gardening* and *arboriculture*.

Although much advancement has been made in modern farming, this enterprise does not represent a radical departure from the best practice of agricultural arts and stock raising in the earlier times. However, the principles which underlie successful method are better understood at present and the farmer is able to profit from the experience of others. The soil is the laboratory of the farmer. He must necessarily study the constituents of the soil so he may know how to treat it and what classes of plants to cultivate. This has become possible through the greater intelligence of the agriculturists and the valuable assistance furnished by the government and through agricultural schools and periodicals.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA is recommended as a work of reference in studying the arts of agriculture, horticulture, and forestry. It contains practical suggestions and a wide fund of information on these topics. The reader should consult articles under the titles of Agriculture, Agricultural Education, Corn, Elevator, Forestry, Irrigation, Milk, Soil, Swine, Turkey, and hundreds of others. The titles especially outlined in this book suggest innumerable correlated topics which are of relative importance to the student of agricultural arts.

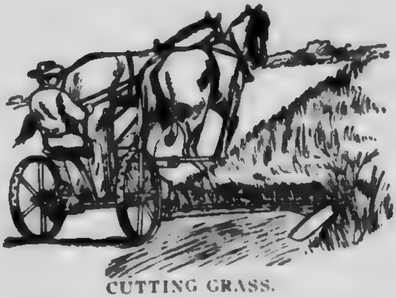
Education in Agriculture.

- I. AGRICULTURAL EDUCATION.
  - 1. History.
    - A. Dates from antiquity.
    - B. Early schools — Studied agriculture alone.
    - C. Schools.
      - a. England—near Cirencester.
      - b. Germany—Berlin.
      - c. Canada — Guelph, New Brunswick, Quebec, Manitoba, etc.
      - d. Australia — Richmond, Gatton, Dookie.
      - e. United States—National and State (One in each).
      - f. Societies.
        - 1. Farmers' Institutes.
        - 2. Farmers' Organizations.
- II. DEPARTMENT OF AGRICULTURE.
  - 1. When organized.
  - 2. Chief officer.
  - 3. Reports.
  - 4. Objects.
  - 5. Literature—Library, periodicals, *Year Book.*
  - 6. Bureaus—Soil, Chemistry, Animal industry, Weather, etc.
- III. EXPERIMENT STATION.
  - 1. What is it.
  - 2. Purposes.
  - 3. Principal stations — Canada, England, United States.
  - 4. Grants and appropriations.
  - 5. Administration.
  - 6. Bulletins.
  - 7. Means of promoting interest.

Outline in Agriculture.

- I. FARMING.
  - 1. Location.
    - A. As to climatic conditions.
      - 1. Amount and distribution of heat and moisture.
      - 2. Length of season and character of same.
      - 3. Nature of changes—Sudden, gradual, etc.
      - 4. Drainage.
    - B. As to character of land.
      - 1. Highland or lowland.
      - 2. Level or rolling land.
      - 3. Prairie or timbered land.
      - 4. Fertile or sterile land.
    - C. As to nature of the soil.
      - 1. Origin and formation.
      - 2. Nature and composition.
      - 3. Kinds, etc.
    - D. As to accessibility to market.
  - 2. Making the farm.
    - A. In timbered land.
    - B. In prairie land.
    - C. Nature and extent of work required in each case.
    - D. Relative value of the farms.
    - E. Fertilization.
    - F. Irrigation.
  - 3. Divisions of the farm.
    - A. Tillable land.
      - 1. Field, meadow.
      - 2. Garden, orchard, and vineyard.
    - B. Pasture land.
    - C. Relative proportion of each.
    - D. Nature and use of each.
  - 4. Location of buildings.
    - A. The dwelling.
      - 1. In reference to pasture, fields, garden, orchard.
      - 2. Accessibility to road.
    - B. The barn.
      - 1. In reference to dwelling and pasture.
    - C. The granary.
      - 1. In reference to safety and accessibility to fields.

- **D. The wood and coal house.**
    - 1. In reference to dwelling.
- E. Chicken house.
- F. Meat house.
- G. Milk house (dairy).
- H. Tool and implement house (Here draw a plan of farm, locating the pasture, fields, meadow, garden, orchard, vineyard, and the different buildings).
    - A model farm.



CUTTING GRASS.

- 5. Products of the farm.
    - A. Cereals—Corn, wheat, oats, rye, flax.
    - B. Grasses—Timothy, alfalfa, clover, etc.
    - C. Fruits — Apples, peaches, pears, plums, apricots, etc.
    - D. Garden vegetables—Beans, peas, potatoes, onions, tomatoes, cucumbers.
    - E. Products of the vineyard—Grapes, berries, etc.
    - F. Planting—Cultivating, harvesting, and marketing each.
- 6. Implements used in farming.
    - A. The plow, breaking plow, cultivating plow—Use of.
    - B. The harrow, the roller—Use of each.
    - C. The planter, the drill—Use of each.
    - D. The mower, the reaper—Use of each.
    - E. The thrasher, the stacker—Use of each.
    - F. The wagon—Use.
    - G. The hoe and rake—Use of each.

Field lesson — Visit an implement house. Get pictures of the different implements.

- 7. Animals used in farming.
    - Beasts of burden.
        - A. The ox.
        - B. The horse.
        - C. The mule.
    - Fowls.
        - A. Chicken.
        - B. Duck.
        - C. Turkey.
        - D. Guinea.
        - E. Goose.
    - Used for food and clothing.

HARVESTING GRAIN.

- A. The cow.
- B. The sheep.
- C. The hog.
- D. Goats.
- 8. Kinds of farms.
    - A. Grain farms.
    - B. Grass farms.
    - C. Fruit farms.
    - D. Dairy farms.
    - E. Stock farms.
    - F. Garden farms.
    - G. Poultry farms.

- II. STOCK RAISING.
    - 1. Stock farm.
        - A. Special features.
            - 1. Water.
            - 2. Grass.
        - B. Difference and similarity to other farms.
            - 1. Character of the land.
            - 2. Divisions of farm.
        - C. Extent and size.
            - 1. Depends upon num and kind of stock.
            - 2. Depends upon nat of soil and kind land.
        - D. Division and arrangeme
            - 1. Pastures.

2. Meadows.
3. Fields.
4. Feed lots.
5. Location of each division with reference to the other.

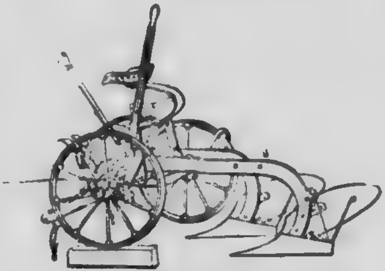
E. Caring for the farm.
1. Kind of work.
2. Extent of work.

2. Kinds of stock.

A. Horses.
1. As to use—Draft, roadster, race, saddle, buggy and ponies.
2. As to breeds—Common and fine breeds.

B. Mules.
1. As to use—Draft, roadster, and saddle.
2. As to breeds—Common and fine.

C. Cattle.
1. As to use—Draft, beef, and milkers.
2. As to breeds—Common and fine.



GANG PLOW.

D. Hogs.
1. As to use—Meat, feeders, and stockers.
2. As to breeds—Common and fine.

E. Sheep.
1. As to use — Clothing and food—mutton.
2. As to breeds—Common and fine.

F. Goats.
1. As to use—Food and clothing.
2. As to breeds—Common and fine.

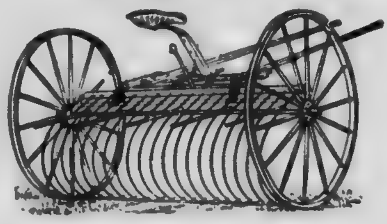
G. Common fowls.
1. Chicken.
2. Geese.
3. Turkeys.
4. Ducks.
5. Guineas.
6. Kinds and use of each.

3. Caring for the stock.
A. Pasturing.
B. Making provisions for watering—Ponds, creeks, wells.
C. Feeding — Kinds of food for each.
D. Housing or sheltering.

4. Marketing the stock.
A. When—The season of the year.
B. How done.
C. Shipping.

III. FARMING SECTIONS.

A. 1. Make a study of your State or Province.
2. United States.
3. Canada, Mexico, and Central America.



HAY RAKE.

4. Draw maps and locate on them the farming sections.
5. Tell what is grown in these sections.
6. Name and locate the great markets of each section.
7. Amount of production.

B. 1. Make a study of South America in a similar manner (Use outline under A).
2. Compare farming belts of South America with those of North America as to extent and amount of production.

C. 1. Study Europe by outline under A (4, 5, 6 and 7).
2. Compare with North America and South America as to the extent of farming belts and the amount of production.

D. 1. Study Asia, Africa, and Australia in a similar manner.
2. Compare with other continents as to extent and production.

E. 1. Study the islands of the sea—Japan, Philippines, Cuba.

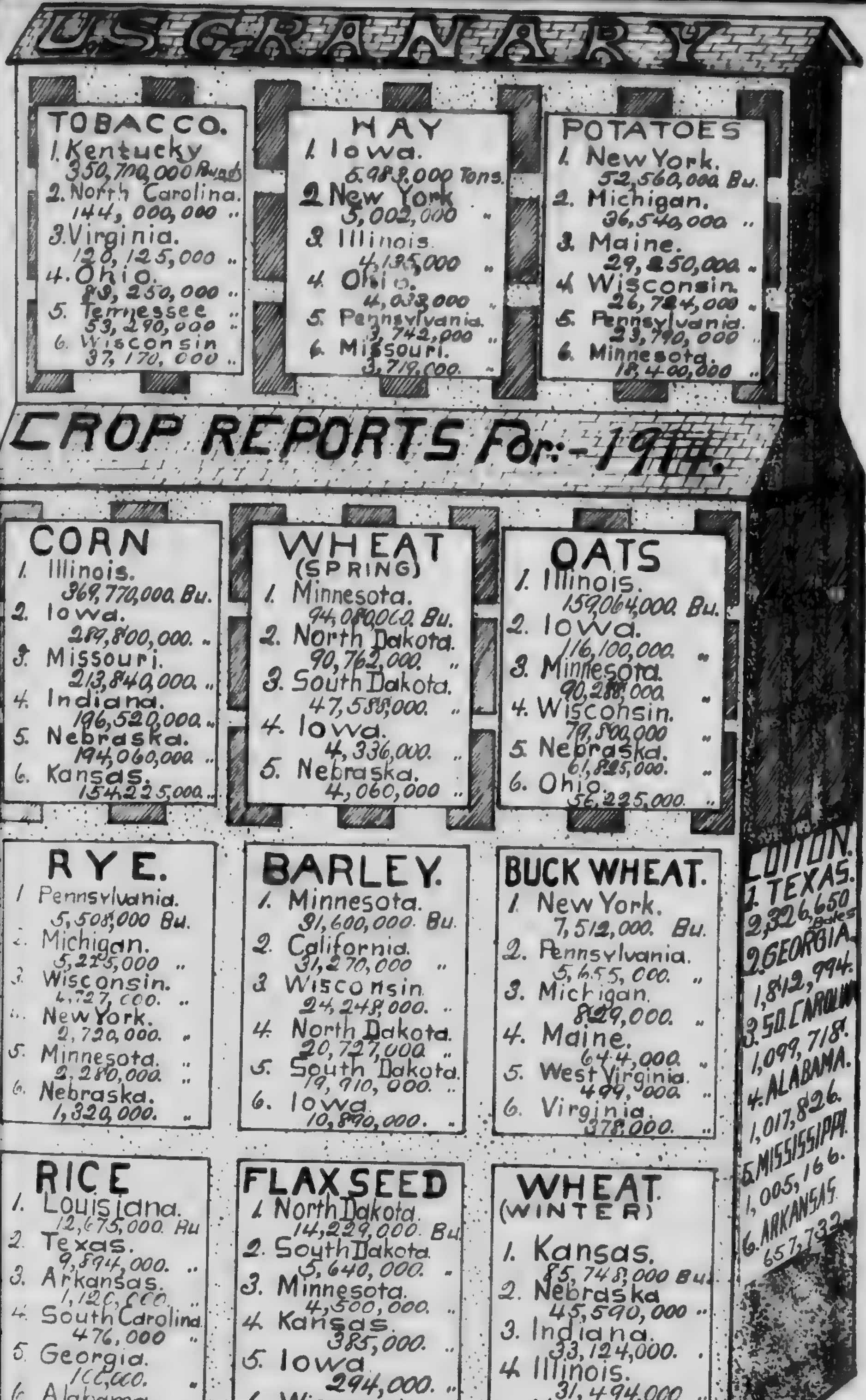
IV. STOCK-RAISING SECTIONS.
A. 1. United States and Canada.
  2. Other countries of North America.
  3. Location and extent.
  4. Kind and number of stock.
  5. Stock markets—Locate and name them and give to what extent engaged in buying and selling and shipping stock.
  6. Different stock markets.
    1. Cattle market.
    2. Hog market.
    3. Sheep and goat market.
    4. Horse and mule market.
    5. Poultry market.
B. 1. Make a study of South America, Europe, Asia, Africa, and Australia, in a similar manner.
  2. Compare with North America as the number and kind of stock bought, sold, and shipped.

V. TYPE STUDIES.
  1. Vegetable origin.
    A. Wheat, corn, rice, flax, cotton.
    B. Apple, peach, pear, plum, apricot, banana, orange, lemon.
    C. Beans, peas, potatoes, tomatoes, cabbage.
  2. A. Preparation of ground.
    B. Planting.
    C. Cultivating.
    D. Harvesting.
    E. Marketing.
    F. Amount of production.
  3. Animal origin.
    A. Cattle.
    B. Hogs.
    C. Sheep.
    D. Goats.
    E. Horses and mules.
    F. Silk.
  4. A. Raising.
    B. Feeding and housing.
    C. Preparing for market.
    D. Marketing.
    E. Shipping.
    F. Use.
    G. Amount.

The final thought: The world is a great farm.

Subjects for Study.

Adulteration.
Agrarian Law.
Agricultural Education.
Agriculture.
Animal.
Animal Intelligence.
Architecture.
Atmosphere.
Barometer.
Bean.
Bee.
Beer.
Beet.
Birds.
Bread.
Breeding.
Brick.
Butter.
Cattle.
Climate.
Cheese.
Clover.
Commerce.
Cream.
Dairying.
Dehorning.
Dog.
Earthworm.
Education.
Egg.
Ensilage.
Farmers' Institute.
Fence.
Fertilizers.
Floriculture.
Food.
Flour.
Forest.
Germination.
Grafting.
Grape.
Grass.
Guano.
Harvesting Machinery.
Horse
Horticulture.
Insects.
Insurance.
Labor.
Land.
Lumber.
Milk.
Oats.
Parasites.
Polder.
Political Economy.
Potato.
Poultry.
Rent.
Sewage.
Sheep.
Soil.
Sugar.
Swine.
Tariff.
Tax.
Technical Education.
Telephone.
Tobacco.
Weeds.
Wire.
Wool.



U.S. GRANARY

CROP REPORTS For:-1914.

TOBACCO.

1. Kentucky 350,700,000 Pnds
2. North Carolina. 144,000,000 "
3. Virginia. 120,125,000 "
4. Ohio. 89,250,000 "
5. Tennessee 53,290,000 "
6. Wisconsin 37,170,000 "

HAY

1. Iowa. 5,988,000 Tons.
2. New York 5,002,000 "
3. Illinois. 4,135,000 "
4. Ohio. 4,033,000 "
5. Pennsylvania. 3,742,000 "
6. Missouri. 3,719,000. "

POTATOES

1. New York. 52,560,000 Bu.
2. Michigan. 36,540,000 "
3. Maine. 29,250,000 "
4. Wisconsin. 26,724,000 "
5. Pennsylvania. 23,790,000 "
6. Minnesota. 18,400,000 "

CORN

1. Illinois. 369,770,000. Bu.
2. Iowa. 289,800,000. "
3. Missouri. 213,840,000. "
4. Indiana. 196,520,000. "
5. Nebraska. 194,060,000. "
6. Kansas. 154,225,000. "

WHEAT (SPRING)

1. Minnesota. 94,080,000. Bu.
2. North Dakota. 90,762,000. "
3. South Dakota. 47,588,000. "
4. Iowa. 4,336,000. "
5. Nebraska. 4,060,000 "

OATS

1. Illinois. 159,064,000. Bu.
2. Iowa. 116,100,000. "
3. Minnesota. 90,288,000. "
4. Wisconsin. 79,800,000 "
5. Nebraska. 61,825,000. "
6. Ohio. 56,225,000. "

RYE.

1. Pennsylvania. 5,508,000 Bu.
2. Michigan. 5,275,000 "
3. Wisconsin. 4,727,000. "
4. New York. 2,720,000. "
5. Minnesota. 2,280,000. "
6. Nebraska. 1,320,000. "

BARLEY.

1. Minnesota. 31,600,000. Bu.
2. California. 31,270,000 "
3. Wisconsin. 24,248,000. "
4. North Dakota. 20,727,000 "
5. South Dakota. 19,910,000. "
6. Iowa. 10,890,000. "

BUCK WHEAT.

1. New York. 7,512,000. Bu.
2. Pennsylvania. 5,655,000. "
3. Michigan. 829,000. "
4. Maine. 644,000. "
5. West Virginia. 499,000. "
6. Virginia. 378,000. "

COTTON.

1. TEXAS. 2,326,650 Bales
2. GEORGIA. 1,812,994.
3. SO. CAROLINA 1,099,718.
4. ALABAMA. 1,017,826.
5. MISSISSIPPI. 1,005,166.
6. ARKANSAS. 657,732.

RICE

1. Louisiana. 12,675,000. Bu
2. Texas. 9,894,000. "
3. Arkansas. 1,120,000. "
4. South Carolina. 476,000 "
5. Georgia. 100,000. "
6. Alabama. 35,000. "

FLAXSEED

1. North Dakota. 14,229,000. Bu
2. South Dakota. 5,640,000. "
3. Minnesota. 4,500,000. "
4. Kansas. 385,000. "
5. Iowa 294,000. "
6. Wisconsin. 290,000 "

WHEAT (WINTER)

1. Kansas. 85,748,000 Bu.
2. Nebraska 45,590,000 "
3. Indiana. 33,124,000. "
4. Illinois. 31,494,000 "
5. Missouri. 28,562,000 "

Questions on Agriculture.

How does agriculture rank among the world's occupations?

When and where was the first college of agriculture established? Who was its leader? 37.

When was the Department of Agriculture organized? What is the "Year Book?" 40.

Name the chief benefits of Agricultural Experiment Stations. How are they managed?

Give a list of the principal courses pursued in agricultural schools. Locate the leading schools of this kind in Canada.

What are the chief farm implements used? Describe some of the latest inventions in farm machinery.

State the benefits of scientific farming on small farms. Compare the present size and number of farms with those of earlier days.

Give some strong points in regard to selecting a location for a profitable farm home.

State some means of fertilizing soil. Explain what is meant by "rotation of crops" and "specializing" in farming.

Name the pests and dangers to which the following are subject and give remedy for each: wheat, cotton, potatoes, squashes, apples, cabbage, gooseberries and cherries.

Why is seed selecting so important? How has the government aided the farmer in this respect?

What is floriculture? Grafting? Pruning? Rust? Smut? Nicotine? Vegetable? Blight?

By naming a dozen or more staple articles of food endeavor to show the extent of our dependence upon the farmer.

What are the chief animals used in farming? Name ten useful animal products.

Locate the best farming regions of Canada. Name some of its leading exports.

For what crops are the following noted: Kansas, Minnesota, Ontario, Washington, British Columbia, Georgia, and Colorado?

Who was Burbank and what special improvements has he made in plant life? What flower is named after him? 406.

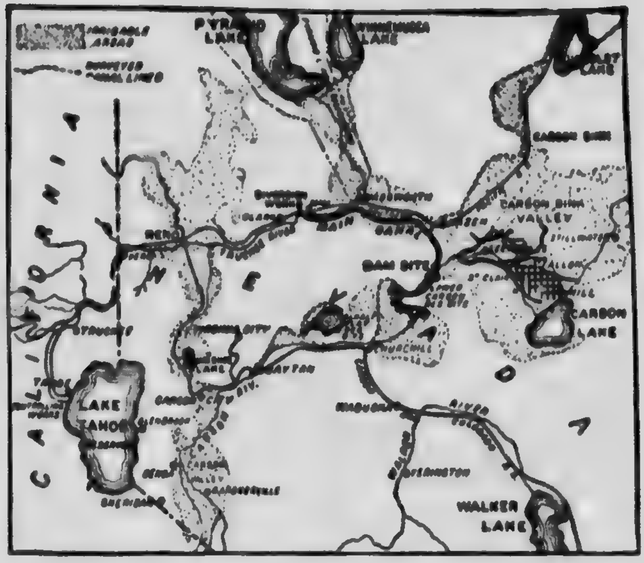
Irrigation.

I. OBJECT—To produce or increase fertility.
II. HISTORY—Ancient and modern.
III. IRRIGATION contrasted with dry farming.
IV. NECESSARY DEPENDENCE.
  1. Soil.
  2. Crops grown.
  3. Amount of evaporation.
  4. Season and distribution of rainfall.
V. METHODS AND MEANS.
  1. Sources of supply.
    A. Rivers.
    B. Lakes.
    C. Springs.
    D. Artesian wells.
    E. Freshets.
    F. Melting snows.
  2. How reserved—Dams and reservoirs.
  3. Means of distribution—Canals and ditches.
  4. Forced into channels as needed by pumps, windmills, or machinery.
  5. Inundation system used in the South for rice fields and cranberries.

I. WHERE CARRIED ON.
- 1. Egypt.
  - A. When.
  - B. Source of water supply.
  - C. Extent of arid region.
  - D. Method of irrigating.
  - E. Benefit—Number of crops, etc.
  - F. Assuan dam.
- 2. Asia—Persia, India, China, etc.
- 3. Europe—Italy, Spain, France, etc
- 4. America—New Mexico, Arizona, Alberta, California, Utah, Oregon, Georgia, etc.

II. STATISTICS.
- 1. Extent of arid regions.
- 2. Amount of reclaimed lands.
- 3. Value of irrigated lands.

III. RECLAMATION ACT.
- 1. When passed.
- 2. Purpose.
- 3. Benefits derived.
- 4. Truckee-Carson system.
  - A. States affected.
  - B. Canals.
  - C. Extent of distribution.



TRUCKEE-CARSON IRRIGATION SYSTEM IN NEVADA.

Questions on Irrigation.

Define irrigation. 1413.

What are its chief purposes?

Upon what does the necessity of irrigation depend?

What two things greatly determine the value of irrigated land?

Name some eastern countries where irrigation is carried on most extensively.

In what sections of North America are traces of irrigation by prehistoric peoples?

How do present methods compare with the ancient? State some changes.

Where are the greatest arid regions of the United States? Which State has the largest amount of reclaimed land? 1414.

How has irrigation aided in populating the western states?

Where is the largest irrigated area in the world?

Describe the Assuan dam of Egypt.

What was the Reclamation Act? What land has been especially benefited thereby?

Describe the Truckee-Carson system.

State some of the chief benefits irrigation has produced in America.

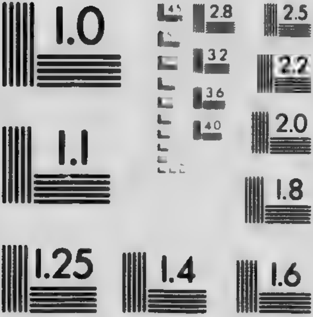
Blessings of the Rain.

When the blacken'ng clouds in sprinkling showers
Distill, from the high summits down the rain
Runs trickling, with the fertile moisture cheer'd,
The orchards smile, joyous the farmers see
Their thriving plants, and bless the heavenly dew.

—*Philip.*

MICROCOPY RESOLUTION TEST CHART

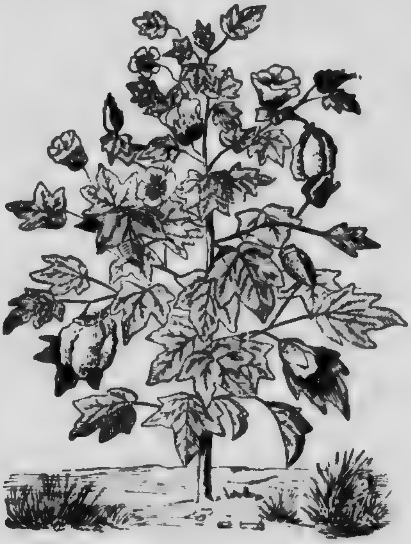
ANSI and ISO TEST CHART No. 2



APPLIED IMAGE Inc

Cotton.

I. GENUS—GOSSYPIUM.
II. DESCRIPTION.
  1. Shrublike.
  2. Lobed leaves.
  3. Flowers, yellowish (like hollyhock).
   A. Celled capsule which bursts open when ripe (Bell).
   B. Black seeds covered with cellular fibers.
  4. Leaves—Dark green with blue veins.
III. SPECIES (Several).
  1. Short fiber, or upland.
  2. Long fiber, or Sea Island (Southern States).
IV. CULTIVATION.
  1. Planted in fields like corn.
  2. Preparation of ground (Plowed in spring).
  3. Drilling of seeds (Rows 3 ft. apart).
  4. Plants appear above ground in 8 days.
  5. Plants cultivated 3 times.
  6. Seeds ripened in 70 days.
V. GATHERING OR HARVESTING.
  1. Bursting of pods or bolls.
  2. Picked by hand. All not ripe at once.
  3. Sent to gin house (Separated from seed).
  4. Pressed in bales of 500 lbs.
  5. Bales bound ready for shipment.
VI. PRODUCTS.
  1. Raw material made into cotton cloth.
  2. Cotton stalks—manufacture of pulp.
  3. Cotton-seed oil.
   A. Food.
   B. Lard and butter.
   C. Food for animals.
VII. WHERE GROWN.
  1. Native to tropical regions.
   A. Cultivated between latitudes 35 degrees north and 35 degrees south.
  2. Southern States.
   A. Texas (Leading).
   B. Mississippi.
   C. Georgia.
   D. Alabama, North Carolina, Louisiana, Arkansas.
  3. Egypt.
  4. Russia.
  5. China, Brazil, Mexico, West Indies, Asiatic islands of the Pacific Ocean.
VIII. HISTORY.
  1. Writings of Herodotus.
  2. Mentioned by Aristobulus (Alexander's general).
  3. Arabians made cotton cloth in 627 A. D.
  4. Introduced into Italy 14th century.
  5. Mentioned in English history, 1436.
  6. Made into cloth in 1736 by Louis Paul.
  7. Native of West Indies and South America.
  8. Cotton seed brought to Georgia, 1786.
  9. First cotton mill (Beverly, Mass.).
  10. Invention of cotton gin, 1793.
IX. ANNUAL OUTPUT.
  1. United States (13,500,000 bales) 66⅔ per cent. of world's crop.
  2. World's output (19,912,500 bales) 1909.



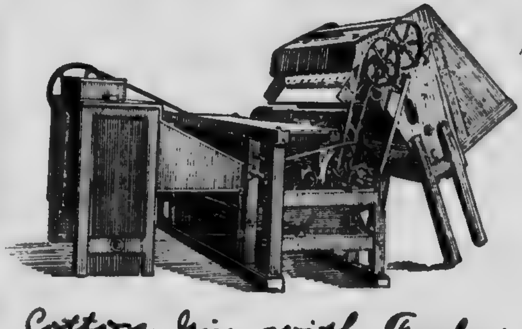
Cotton Plant.

Flower (Enlarged)

Seed with Fibers.

Hauling Bales to the Market.

Cotton Boll.



Cotton Gin with Feeder.

BLACKBOARD LESSON.

X. **Enemies.**
1. Boll moth.
    A. Deposits eggs under leaves.
2. Boll worm (Larva of boll moth).
3. Boll weevil.
    A. Beetle with elongated head.
4. Red bug.
    A. Suctorial.

The Cotton Plant.

Sing, Oh! sing for the Cotton Plant!
Bravely may it grow,
Bearing in its seeded pod
Cotton white as snow.

Spin the Cotton into thread;
Weave it in the loom;
Wear it now, dear little child,
In your happy home.

When you've worn it long and well,
Will it worthless be?
No, a book made from the dress
You yet, in time, may see.

Sort the rags and grind the pulp;
Weave the paper fair;
Now it only waits for words
To be printed there.

May ten thousand Cotton Plants
Spring up, fresh and fair,
That words of wisdom and of love,
O'er all the world shall bear.
—*Selected.*

Questions on Cotton.

The cotton belt covers how wide a belt north and south of the Equator?

Name two of the principal varieties of cotton. 687.

Which is the better quality?

What can you say about the manufacture of cotton goods by the Arabians in early times?

When was the culture of cotton commenced in Italy?

When was the first cotton mill in America erected? Where?

When was cotton seed first brought into Georgia?

When was the manufacture of cotton into cloth by means of machinery begun?

How many million bales are produced annually in the United States?

How is cotton baled and what is the average weight per bale?

How is cotton cultivated?

When is the ground plowed? How are the seeds planted?

How many times must it be cultivated and weeded?

Should it be cultivated after the plants flower?

About how many days after maturity should cotton be gathered and why?

Why must cotton be picked by hand?

What effect did the invention of the cotton gin have upon the production of cotton?

Name six of the leading cotton states.

Tell who invented the spinning gin and the power loom.

To what countries is the greater part of our raw cotton exported?

What use is made of the cotton stalks?

From what part of the cotton is cotton oil manufactured?

What is cotton-seed cake and for what is it used?

Name four articles made from cotton.

Where does the cotton boll moth lay its eggs?

Where does the boll weevel lay its eggs?

In what way does the red bug or cotton stainer injure the cotton?

Which is the more valuable, cotton crops or the wheat crops of the United States?

Corn.

I. History.
  1. Where first known.
  2. Native to what country.
  3. By whom introduced into Europe.

II. Kinds.
  1. Dent.
  2. Sweet corn.
  3. Popcorn.
  4. Flint.

III. Description.
  1. Names.
  2. Family.
  3. Stem.
    A. Structure.
    B. Height.
    C. Covering.
  4. Leaves and silks.
  5. Roots.
  6. Ears.
    A. Developed within leaf sheaf.
    B. Kernels—18 to 20 in a row.
    C. Color—White, yellow, red, or mixed.

IV. Testing.
  1. Select fully ripened ears.
  2. Well-developed ears.
  3. Full, straight rows of kernels.
  4. Plump, even grains.
  5. Plant in box in suitable soil.
  6. Watch development of growth, stand, etc.

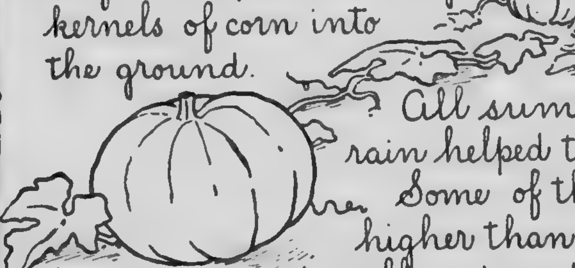
DENT CORN.

V. Planting.
  1. Soil—Well-drained, rich, sandy loam.
  2. Preparation of ground—Plowed, disced, and harrowed.
  3. Time of planting—May 1 to 20.
    Old rule—"Maize should not be planted until the white oak leaves were of the size of a squirrel's ear."
  4. How planted.
    A. With corn planter.
    B. 3 or 4 stalks to a hill.
    C. Hills 3½ ft. apart each way.

VI. Cultivation.
  1. Purpose—To sterilize soil; to promote growth; check weed crop.
  2. Machinery used—Cultivator and plow.
  3. Process begins—June and lasts about six weeks until plants are too large to escape injury by machines.
  4. Cultivated each time at right angles to preceding direction.

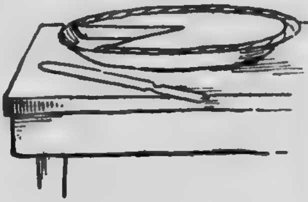
VII. Enemies.
  1. Larva beetles.
  2. Root worm.
  3. Cutworm.
  4. Chinch bug.
  5. Weevil

This is a stack of corn.
It was tied in this big bunch by
the farmer.
By and by he will husk the corn.
The cows like to eat the husks
and stalks and ears of corn.
This corn was planted last spring.
The farmer put the tiny
kernels of corn into
the ground.



All summer the sun and
rain helped the corn to grow.
Some of the stalks were
higher than a man's head.

Here is a round yellow pumpkin.
It grew in the field with the corn.
The farmer planted the pumpkin-seeds
beside the hills of corn.
The pumpkin vines and blossoms looked
very pretty under the long shiny corn leaves.
When the pumpkins were ripe they looked like
great golden balls dropped in the fields.
This pumpkin will make a nice pie.
O, here is a pumpkin pie!



I see this pie is cut, and
one piece is gone
I-wonder-who-ate-that-
piece-of-pumpkin-pie!
We have pumpkin pies for Thanksgiving.
Thanksgiving is almost here.

BLACKBOARD LESSON.

- **VIII. HARVESTING.**
  - 1. Sweet corn.
    - Use—Canning, drying, roasting ears, etc.
    - Gathered when grains begin to glaze.
  - 2. Dent corn.
    - Gathered for fodder when grains glaze.
    - Also see Ensilage.
    - Ripened corn gathered in October and November by husking, then cribbing.
  - 3. Machines used—Corn harvester, shredder, roller, etc.
- IX. USES.
  - 1. Food.
    - A. Animals.
      - a. Whole corn, ground, cracked, fodder, etc.
    - B. Mankind.
      - a. Meal, hominy, roasting ears, canned, etc.
      - b. Manufactured products.
        - Starch.
        - Liquors.
        - Glucose.
        - Candy.
        - Oil.
        - Breakfast foods.
  - 2. Cobs.
    - A. Fuel.
    - B. Pipes.
    - C. Syrup.
  - 3. Husks.
    - A. Mattresses.
    - B. Mats.
    - C. Paper.
    - D. Stock.
- X. MARKETING.
  - 1. Cribbed.
  - 2. Shelled.
  - 3. Hauled to elevators.
  - 4. Sent to mills.
  - 5. Markets.
    - A. Local.
    - B. General.
    - C. Board of Trade.
- XI. CORN LANDS.
  - 1. United States.
    - A. Annual production.
    - B. Comparative value.
    - C. Rank of Mississippi valley as corn-producing region.
    - D. Leading corn-producing states — Iowa, Illinois, Kansas, etc.
  - 2. Canada.
    - A. Ontario.
      - Annual crop.
  - 3. Agricultural countries of Temperate zones.

Questions on Corn.

What is the origin of the name Indian corn?

Describe fully the corn plant. 678.

Tell why and how seed corn should be tested.

Where are the male and the female organs of the corn flower found?

When should it be planted? Give the rule of early days.

Name the different machines used in caring for a crop of corn.

What are the enemies of corn?

Why was popcorn so named?

Name ten products obtained from corn.

To what regions is flint corn especially adapted, and why?

Tell how Indians planted corn and how they prepared it for food.

How does corn compare as a food with other grains?

What nutritive properties are found in corn?

What are the prospects at present in the corn market? What is the price per bushel?

To what animals is corn fed chiefly? What is the fattening quality?

Corn in Literature.

Nor forgotten nor neglected
Was the grave where lay Mondamin
Sleeping in the rain and sunshine.

* * * *

Day by day did Hiawatha
Go to wait and watch beside it;
Till at length a small green feather
From the earth shot slowly upward,
Then another and another,
And before the winter ended
Stood the maize in all its beauty
With its shining robes about it
And its long, soft yellow tresses.

* * * *

And still later, when the autumn
Changed the long green leaves to yellow,
And the soft and juicy kernels
Grew like wampum hard and yellow,
Then the ripened ears he gathered,
Stripped the withered husks from off them,
As he once had stripped the wrestler,
Gave the first Feast of Mondamin,
And made known unto the people
This new gift of the Great Spirit.
—*Longfellow.*

Corn is King.

Upon a hundred thousand plains
  Its banners rustle in the breeze,
O'er all the nation's wide domains,
  From coast to coast betwixt the seas.

Far back through history's shadowy page
  It shines a power of boundless good,
The people's prop from age to age,
  The one unfailing wealth of food.

How straight and tall and stately stand
  Its serried stalks upright and strong!
How nobly are its outlines planned!
  What grace and charm to it belong!

And let the states their garlands bring,
  Each its own lovely blossom-sign;
But leading all, let Maize be king,
  Holding its place by right divine.
—*Celia Thaxter.*

The Corn Song.

Heap high the farmer's wintry hoard!
  Heap high the golden corn!
No richer gift has autumn poured
  From out her lavish horn!

Let other lands, exulting, glean
  The apple from the pine,
The orange from its glossy green,
  The cluster from the vine.

We better love the hardy gift
  Our rugged vales bestow,
To cheer us when the storm shall drift
  Our harvest fields with snow.

Through vales of grass and meads of flowers
  Our plows their furrows made,
While on the hills the sun and showers
  Of changeful April played.

We dropped the seed o'er hill and plain
  Beneath the sun of May,
And frightened from our sprouting grain
  The robber crow away.

All through the long, bright days of June
  Its leaves grew green and fair,
And waved in hot midsummer noon
  Its soft and yellow hair.

And now with autumn's moonlit eves,
  Its harvest time has come,
We pluck away its frosted leaves,
  And bear the treasure home.

There, when the snows about us drift,
  And winter winds are cold,
Fair hands the broken grain shall sift
  And knead its meal of gold.

Let earth withhold her goodly root,
  Let mildew blight the rye,
Give to the worm the orchard's fruit
  The wheatfield to the fly.

But let the good old crop adorn
  The hills our fathers trod;
Still let us, for his golden corn,
  Send up our thanks to God.
—*Whittier.*

Grass.

Creeping, creeping, here and there,
In fields and meadows, everywhere,
Coming up to greet the Spring,
And hear the robin red-breast sing;
Creeping under children's feet,
Glancing at the violets sweet,
Growing into tiny bowers
For the dainty meadow flowers—
We are small, but think a minute
Of a world with no grass in it.
—Selected.

- I. Species—4,500.
- II. Classes.
  - 1. Natural.
  - 2. Artificial.
- III. Propagation.
  - 1. From seed and roots.
  - 2. Sowed broadcast.
  - 3. Annual.
  - 4. Perennial.
- IV. Natural Grasses.
  - 1. Series A.
    - A. Maize or Indian corn.
    - B. Millet (650 species).
    - C. Rice.
    - D. Lemon grass.
    - E. Sorghum.
    - F. Mesquite, etc.
  - 2. Series B.
    - A. Timothy (750 species).
    - B. Oats, wheat, rye, etc.
    - C. Blue grass.
    - D. Bamboo, redtop.
    - E. Canary grass.
    - F. Buffalo grass, etc.
- V. Artificial Grasses.
  - A. Clover.
  - B. Alfalfa.
  - C. Cowpea, etc.
- VI. For What Cultivated.
  - 1. Hay.
  - 2. Pasturage.
  - 3. Seed.
  - 4. Soiling.
- VII. Cultivation of Grasses.
  - A. Distribution.
    - a. All agricultural lands.
    - b. United States.
      - Iowa (First).
      - New York.
      - Kansas.
      - Pennsylvania.
      - Missouri.
      - Illinois.
      - Nebraska.
    - c. Canada.
      - Ontario.
      - Manitoba.
      - Quebec.
    - d. Acreage.
    - e. Annual production.
    - f. Value.
  - B. Harvesting.
    - a. Number of crops (Two and sometimes more per season).
    - b. Time.
      - First crop—Early summer.
      - Second crop (Aftermath) —Few weeks later.
    - c. Manner—Machinery.
      - Cut.
      - Cured.
      - Raked.
      - Stacked.
      - Stored, in barns.
      - Baled for transportation.
  - C. Preservation.
    - a. Curing.
      - Cut when in blossom.
      - Exposed to air.
      - Dried in sun.
    - b. Ensilage.
      - Cut just before ripe.
      - Stored in mass in deep trenches.
      - Placed in mow or silo.
  - D. Kinds.
    - 1. Timothy.
      - a. Origin of name.
      - b. Native to Europe.
      - c. When sown.
      - d. With what grains sown.
      - e. When mature for cutting.
      - f. Stems.
      - g. Form.
      - h. Height.
      - i. Quality.

j. Quantity.
k. Where grown.
2. Clover, Trefoil (Not a true grass).
a. Genus—Trifolium.
b. Family.
c. Species—150.
d. Kinds.
Dutch.
French.
Red.
White.
Alsike, or Swedish.
e. Uses.
f. Enemies.
3. Alfalfa, or Lucerne (Not a true grass).
a. Name—Spanish origin.
b. Description.
Stem.
Leaves.
Flowers.
Height.
c. Where grown.
1. America.
Nebraska.
Kansas.
Texas.
Colorado.
Western Canada.
2. Europe.
Countries along the Mediterranean.
d. Characteristics.
Deep rooted.
Adapted to dry localities.
Nourishing.
Healthful.
Yields 3 to 8 tons per acre annually.
Several crops per year.
4. Redtop.
a. When sown.
b. With what other seed sown.
c. Kind of soil required.
d. Chief advantage over other grasses.
e. Uses.
5. Blue Grass.
a. Permanent.
b. Hardy.
c. Length of growing season.

RED CLOVER.

d. Where grown.
Eurasia.
America.
1. Mississippi Valley.
2. Kentucky (Blue Grass State).
e. Use.
Pasturage.
Lawn.
Hay.
6. Bamboo.
A. Description.
1. Stem.
2. Rootstalk.
3. Height.
4. Soil required.
B. Propagation.
C. Uses.
D. Products.
E. Where grown.
1. Tropical regions.
America.
Africa.
Asia.

Questions on Grass.

What plants are included with natural grasses? 1182.

What is the extent of growth in a season? Name some species.

State some uses. Name some of the products obtained.

Describe the harvesting of grasses to make hay.

How may unripe crops be cared for? What is known of the economic value of ensilage? 924.

Which two states rank first in the production of hay?

In which provinces of Canada is the yield greatest?

Upon what does the annual output of hay depend?

At what stage may the best quality of hay be secured?

Explain what is meant by *rowen*.

For what soil is redtop best suited? State one of its valuable properties.

Study the articles on corn, wheat, and barley and write an essay on *Cereals*.

Name some species of clover. What can you tell about alsike?

How may poor and exhausted lands be redeemed? State three uses for clover.

After whom did timothy get its name? By what other name is it known in England?

What proportionate value has timothy hay in the United States?

How is alfalfa particularly adapted to dry regions? How long has it been cultivated in Europe?

Why is blue grass especially valuable for pasturage? Which is the Blue Grass State?

How are lentils prepared for food? 1570.

In which countries is bamboo grown most extensively? State some of its uses to the natives. For what are bamboos used in America?

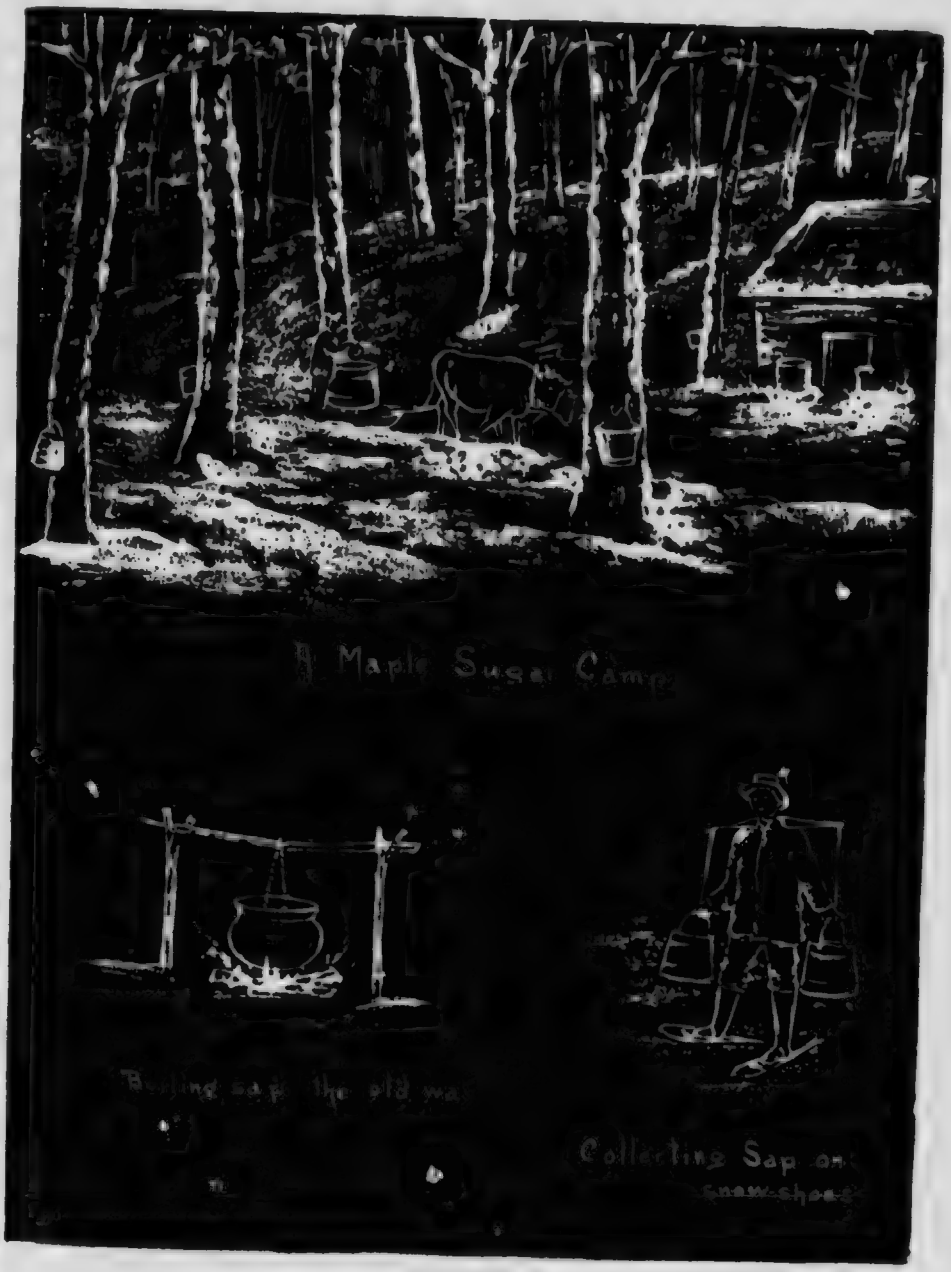
Song of the Clover.

I wonder what the clover thinks,
Intimate friend of Bob-o'-links,
Lover of daisies, slim and white,
Waltzer with buttercups at night;
Keeper of inn for traveling bees,
Serving to them wine dregs and lees,
Left by the Royal Humming Birds,
Who sip and play with fine-spun words;
Comrade of winds, beloved by sun,
Kissed by the dew-drops, one by one;
Prophet of Good Luck mystery,
By sign of four, which few may see;
Sweet by the roadsides, sweet by rills,
Sweet in the meadows, sweet on hills,
Sweet in its white, sweet in its red,
Oh, half its sweetness cannot be said;
Oh! who knows what the clover thinks?
No one! unless the bob-o'-links.
—*Saxe Holm.*

Showers and sunshine bring,
Slowly, the deepening verdure o'er the earth;
To put their foliage out, the woods are slack,
And one by one the singing-birds come back.
—*Bryant.*

Sugar.

- I. DEFINITION.
    - (A sweet crystalline compound).
- II. COMPOSITION.
    - 1. Elements: a. Oxygen; b. Carbon; c. Hydrogen.
    - 2. Proportions of each.
- III. HISTORY.
    - 1. Where first made (India and Arabia).
    - 2. Introduced into Europe (By the Moors into Spain).
    - 3. Introduced into the West Indies (By Spanish Colonists).
    - 4. Introduced for culture in Louisiana (1751).
- IV. FROM WHAT OBTAINED.
    - 1. Sugar Cane.
        - A. Nativity of plant (Central Asia).
        - B. How developed.
        - C. Description.
            - a. Leaves (3 ft. to 5 ft. long).
            - b. Stems.
            - c. Height (7 ft. to 12 ft.).
            - d. Pith (Contains juice).
        - D. Conditions for growth.
            - a. Lowlands (Most suitable).
            - b. A rich alluvial soil.
            - c. Abundant moisture.
        - E. How propagated.
            - a. By cuttings of top joints.
        - F. How planted.
            - a. In rows (5 ft. to 7 ft. apart).
    - 2. Cane Sugar.
        - A. Processes in the field.
            - a. Topping.
            - b. Stemming.
            - c. Cutting.
            - d. Grinding at the mill (Pressing out the juice and straining it).
            - e. Boiling in tanks (Until it becomes granular).
            - f. Separated by machinery from the syrup.
            - g. Raw sugar, or brown sugar.
                - 1. Refining process.
                - 2. Dissolving in hot water.
                - 3. Adding lime and sulphuric acid.
                - 4. Passing through bags of cloth and charcoal.
                - 5. Second boiling.
            - h. Granulated sugar (How made).
            - i. Loaf sugar (How made).
        - B. Cane mills (How constructed).
    - 3. Beet Sugar.
        - A. From what plant derived (Sugar beet).
        - B. Where grown.
            - a. Germany (Produces the most).
            - b. Austria - Hungary, Russia, France, Canada, Belgium, Holland, United States.
        - C. History of cultivation.
            - a. In France by Napoleon (In 1810).
            - b. Discoveries of Count von Arnim.
            - c. United States, experiments of 1890.
        - D. Best zone in United States.
            - a. Location.
            - b. Length.
            - c. Width.
            - d. Government experiments.
            - e. United States production (For 1909, 250,000 tons).
    - 4. Sugar Maple.
        - A. Where grown (Indiana, Ohio, New York, Pennsylvania, West Virginia, New England States, New Brunswick, Ontario).
        - B. Season.
        - C. Sap, how obtained.
        - D. Maple sugar, how made.
        - E. Flavoring and uses.



BLACKBOARD LESSON.

- **5. Jaggery.**
  - A. From what obtained.
  - B. Color.
  - C. Production.
- 6. Sorghum.
  - A. Nativity of plant (China).
  - B. Introduced into France (From China).
  - C. Introduced into America (1856).
  - D. Description.
    - a. Seeds.
    - b. Height.
    - c. Planting.
    - d. Uses.
      - (a) Fodder (In colder and dry climates).
      - (b) Molasses.
    - e. Preparing plant for molasses.
      - (a) Topping and stripping.
      - (b) Grinding and pressing out the juice of the stalks.
      - (c) Boiling to molasses.
    - f. Yield of molasses per acre (75 gal. to 150 gal.).
  - E. Resemblance to broom corn and sugar cane.
- 7. Glucose (Sometimes called grape or starch sugar).
  - A. From what made (Chiefly corn and potatoes).
  - B. Sweetening power (⅔ of that of cane sugar).
  - C. Uses.
    - a. Table syrups and confectionery.
    - b. Artificial honey.
    - c. For brewing liquors.
    - d. Food for bees.
    - e. Making bleached grape sugar.
    - f. For canning fruits.
    - g. Making jellies.
    - h. Making condensed milk.
  - D. Weight per bushel of corn (30 lbs. to 45 lbs. glucose).
  - E. Processes of manufacture.
    - a. Soaking in water.
    - b. Temperature necessary (80°F.).
    - c. Injecting sulphur fumes.
    - d. Time required.
    - e. Grinding, crushing, stirring, separating.
    - f. Extracting the oil.
      - (a) Amount (50%).
      - (b) Uses of the oil.
        - 1. Making salads.
        - 2. Mixing paints and making toilet soaps.
        - 3. Residue feed to stock.
    - g. Removing the gluten.
      - (a) Process (Filtering and drying).
      - (b) Use (Food for stock).
      - (c) Price per ton (About $18.00 per ton).
    - h. Processes after the oil and gluten have been removed.
      - (a) Residue mixed with water.
      - (b) Filtered several times.
      - (c) Converted into syrup by sulphuric acid and muriatic.
        - 1. Pressure (25 lbs. to 40 lbs.).
        - 2. Starch is steamed (About one hour).
        - 3. Converts the starch into glucose, or grape sugar.
        - 4. Solidity (35% solid matter).
        - 5. Color (Yellowish brown).
        - 6. Clarifying. 7. Evaporation.

F. Amount of corn made into glucose yearly in United States (About 48,000,000 bu.).
8. Grape Sugar.
A. From what obtained (Juices of fruits).
a. Apples, peaches, pears, and other fruits.
b. Quantity (From 1 to 15 per cent.).
c. How made.
9. Milk Sugar.
10. Other Materials.
Such as barley, honey, and various allied substances.

V. CONSUMPTION OF SUGAR.
1. For the world in 1909 (14,500,000 tons).
2. Beet sugar consumed in 1909 (7,190,000 tons).
3. United States consumption (2,525,000 tons).
4. United States domestic sugar consumed at home (20%).
5. Consumption per capita of leading nations (annually).
a. England (91.6 lbs.).
b. United States (65.2 lbs.).
c. Switzerland (60.3 lbs.).
d. Canada (54 lbs.).
e. Sweden (38 lbs.).
f. France (36 lbs.).
g. Germany (34 lbs.).
h. Russia (14 lbs.).

VI. REFINERIES.
1. Location in United States
(Largest are at New York, New Orleans, Philadelphia, San Francisco).

VII. PRODUCTION OF SUGAR.
1. Amount.
Beet Sugar.
a. Germany (1,975,000 tons).
b. Austria-Hungary (1,200,000 tons).
c. France (850,000 tons).
d. United States (1909, 250,000 tons).
2. Cane Sugar (1909, U. S., 250,000 tons).

Questions on Sugar.

In what country was sugar first made? 2769.
Of what country is sugar cane a native?
Is sugar cane found in the wild state?
What proportion of sugar is made from the sugar cane?
What is raw sugar? What is brown sugar?
How is raw sugar refined and made white?
How is granulated sugar made?
What are the differences in the processes of making loaf and lump sugar?
Sugar beet juice yields about how many per cent. of sugar?
What countries produce the most cane sugar? Beet sugar? 2770.
From what plants do we obtain grape sugar?
How is glucose or starch sugar made?
What is jaggary sugar? From what plant obtained?
What is the average number of pounds used by each person in the United States per year?
What nation uses the most sugar according to its population?
Is glucose a sugar and from what plants is it chiefly made? 1153.
What can you say about the sweetness of glucose compared to that of cane sugar?
Give the processes of making glucose.
How many pounds of glucose can be made from a bushel of corn?
Name seven articles in which glucose is used in manufacturing.
What is the color of the table beets? Of the sugar beets? 262.
To whom is credit given for the development of the sugar-beet industry?

What can you say of the sugar-beet zone in the United States, as to extent of length and width?

What provinces of Canada are raising the sugar beet successfully?

What State could produce enough sugar beets to supply the entire United States with sugar?

How many pounds of maple sap will a hard maple tree produce? How many pounds of sugar will it make? 1702.

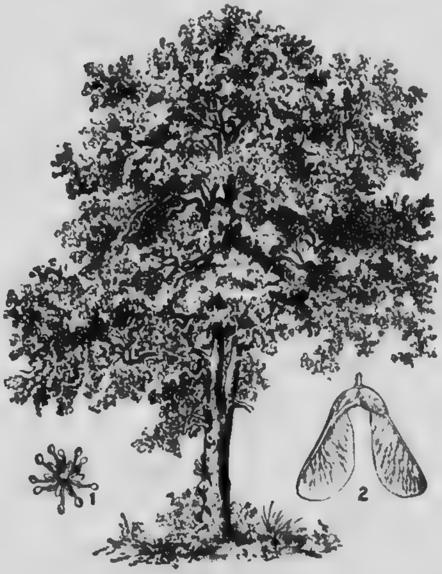
What can you say of the value of maple tree blossoms to bees?

How is maple sugar made? What states produce the most maple sugar?

Of what elements is sugar composed? 2770.

Do Indian corn and sorghum produce sugar?

From what is much of our candy made? 2770, 1153.



SUGAR MAPLE.
1. Flower; 2. Seed.

The Maple Tree.

"There's a maple bud, redder today!
It will almost flower tomorrow;
I could vouch 'twas only yesterday
In a sheet of snow and ice it lay,
With fierce winds blowing in every way.
—*Selected.*

The Song of the Sap.

The woods are still sleeping,
But grass is a peeping
From under the snow.
The swallows are coming,
The bees are a humming,
The sap has begun to flow!

The buds that were hidden
In brown coats are bidden
To break and let the world know.
The Ice-king is quaking,
The spring-time is waking,
For sap has begun to flow!

Memory Gems.

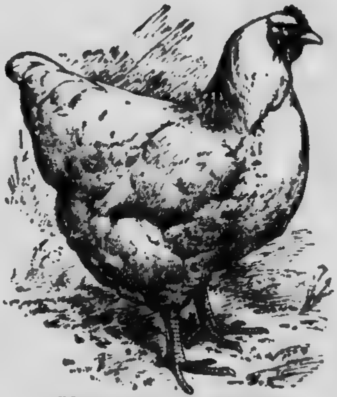
Under the greenwood tree
Who loves to lie with me,
And tune his merry note
Unto the sweet bird's throat,
Come hither, come hither, come hither!
Here shall we see
No enemy
But winter and rough weather.

Who doth ambition shun
And loves to live i' the sun,
Seeking the food he eats
And pleased with what he gets,
Come hither, come hither, come hither!
Here shall he see
No enemy
But winter and rough weather.
—*Shakespeare.*

If Mother Nature patches the leaves of trees and vines,
I'm sure she does her darning with the needles of the pines;
They are so long and slender and somewhere in full view,
She has her threads of cobwebs and her thimble made of dew.
—*W. H. Payne.*

Poultry.

- I. CLASS—DOMESTIC FOWLS.
- II. HISTORY.
  - 1. Origin.
  - 2. Antiquity.
- III. POULTRY RAISING.
  - 1. By whom engaged in.
  - 2. Where carried on.
  - 3. In what countries.
    - A. United States and Canada.
      - a. Annual poultry production.
      - b. Annual egg production.
      - c. Number of eggs used daily.
    - B. France.
    - C. Germany.
- IV. PROPAGATION.
  - 1. From eggs.
  - 2. Incubation.
    - A. Natural—Sitting hens.
    - B. Artificial—Incubator machines.
    - C. Time required—From 2 to 4 weeks.
- V. CARE.
  - 1. Spacious yards.
  - 2. Proper food.
  - 3. Good breeding.
  - 4. Houses.
    - A. Clean.
    - B. Warm.
    - C. Well lighted (Sunlight).
    - D. Ventilated.
- VI. FOOD.
  - 1. Grains (Corn, wheat, rye).
  - 2. Lime.
  - 3. Gravel.
  - 4. Insects.
- VII. KINDS.
  - 1. Chickens.
    - A. Class—Domestic fowls.
      - a. American — General purposes.
      - b. Asiatic—Meat or table use.
      - c. Mediterranean — Egg-making.
      - d. Polish—Ornamental
    - B. Species.
      - a. Leghorn.
      - b. Spanish.
      - c. Hamburg.
      - d. Cochin.
      - e. Brahma.
      - f. Bantam.
      - g. Plymouth Rock.
      - h. Langshan.
      - i. Buff Orpington.
      - j. Wyandotte.
  - 2. Turkey.
    - A. History.
    - B. Species.
      - a. Common.
        - 1. Distribution.
        - 2. Description.
          - a. Head.
          - b. Neck.
          - c. Weight.
          - d. Plumage.
          - e. Food.
          - f. Nests.
          - g. Eggs.
      - b. Honduras.
        - 1. Native to what countries.
        - 2. Size.
        - 3. Plumage.
        - 4. Neck.

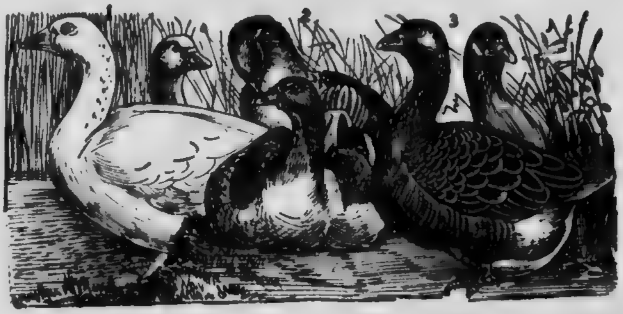


BUFF ORPINGTON HEN.

  - 3. Duck.
    - A. Family—Web-footed birds
    - B. Class—Swimmers.
      - a. Tame.
      - b. Wild.
        - 1. Sea ducks.
        - 2. True ducks.
    - C. Kinds.
      - a. Mallard.
      - b. Wood duck.
      - c. Scaup.
      - d. Pintail.
      - e. Musk duck.
      - f. Pekin.
      - g. Canvasback.
      - h. Aylesbury, etc.
    - D. Nest.

- **E. Eggs.**
  - a. Number—6 to 12.
  - b. Not as desirable as hens' eggs for food.
- F. Use.
  - a. Food.
  - b. Feathers.
- G. Characteristics.
  - a. Shape of bill.
  - b. Awkward waddling movement in walking.
  - c. Brisk flight.
  - d. Excellent swimmer.

4. Goose.
- A. Description.
  - a. Origin.
  - b. Swimmer (Duck family).
  - c. Size.
  - d. Color.
  - e. Body.
  - f. Migration.
  - g. Longevity.
- B. Uses.
  - a. Food.
  - b. Feathers.
  - c. Quills.
  - d. Eggs.
  - e. Oil.



1. SNOW GOOSE. 2. POMERANIAN GOOSE. 3. TOULOUSE GOOSE.

5. Other Species.
- A. Peacock, or Peafowl.
- B. Pigeon.
- C. Swan.
- D. Guinea fowl.

Questions on Poultry.

Explain how poultry should be cared for.

What advantages result from the use of incubators?

What kinds of poultry are the most prolific layers? Which are best for food?

Which country ranks first in the poultry industry?

How many eggs are used daily in the United States alone? 2297.

How many species of chickens can you name? Which class is best adapted for egg-making?

Which is the smalle[illegible]s of chickens?

What is the male goose called? Give a distinguishing feature between wild species of geese and the domestic breeds.

How are turkey eggs incubated? How should young turkeys be cared for?

Mention several uses of geese.

What is the sound made by ducks called? Why are they web-footed?

For what is the peafowl especially noted? How are guineas helpful to poultry raising?

How many weeks are required to incubate the eggs of hens? How many to incubate those of ducks and geese?

Wheat.

- I. GRAIN BELTS
  - Location
    - Give limit by latitude in Northern Hemisphere.
    - Same in Southern Hemisphere.
  - Physical Features
    - Surface.
    - Drainage.
    - Climate.
    - Soil.
  - Occupation
    - Agriculture.
    - Stock Raising.
  - Nationalities
    - Compare in appearance, customs, manners, government, religion.
- II. HOW CULTIVATED
  - Preparation of Ground
    - When—How.
    - Implements used.
    - The old—The improved.
  - Sowing
    - The old way.
    - The new way.
    - Implements used.
  - A Wheat Field
    - Appearance while growing.
    - Appearance when ripe.
    - Visit a wheat field.
      - Color.
      - Size of stock.
      - Height of shock.
      - Heads and grain.
- III. HARVESTING
  - Time
    - When to begin.
    - How long to continue.
  - How
    - The old way
    - The new way
    - Implements used
      - Reaping Hook.
      - Cradle. Scythe.
      - Reaper.
      - Self-binder.
      - Header.
  - Shocking and stacking—When and how done.
- IV. THRESHING
  - When.
  - How
    - Old way.
    - New way.
  - Implements used (Visit an implement house).
  - Storing the wheat—Bins, elevators, etc. (Here describe an ordinary bin and a large elevator).
- V. MILLING
  - Transportation
    - By wagon and capacity.
    - By railroad trains.
      - Number of cars.
      - Capacity.
    - By steamboats
      - Size.
      - Capacity.
  - Storage
    - Bins.
    - Elevators.
  - Cleaning
    - Machinery.
    - Processes.
  - Grinding
    - Old way.
    - New way.
  - Grades of flour (Processes of separating and refining).

Stacking and packing, selling and shipping. A visit to a mill to be made a careful study. Capacity of mill as to storage and for doing work. Number of barrels flour per day. Kinds of wheat. Quantity of wheat. Where it comes from. Kind and grade of flour. Amount used for home consumption. Amount exported, etc. When exported.

- VI. USE
  - Bread
    - Light bread.
    - Biscuit.
    - Light rolls, etc.
    - (Visit to a bakery).
  - Pastry
    - Pies.
    - Cakes, etc.
  - Other uses.
  - Food for animals.
  - Its value as a food product.
- VII. Great Wheat Centers—Where—Why.
  - Export Trade—Where—How much.
  - Imported Trade—Where—How much.

Forestry and Lumbering.

Forestry is the enterprise of cultivating and managing growing timber. In a wider sense it embraces horticulture, which is the art of producing plants that possess value for the agreeable properties of their products. While horticulture is concerned particularly in laying out and taking care of gardens and orchards, it frequently merges into special branches of forestry, such as the cultivation of nut-bearing trees. Consult the articles on FOREST, FORESTRY, HORTICULTURE, GRAFTING, GREENHOUSE, LANDSCAPE GARDENING, FLORICULTURE.

- I. FOREST BELTS
  - Locate, by latitude, all countries you study.
  - Give surface, drainage, climate, soil and occupations of the people.
  - Use—To modify climate, to furnish fuel, to provide shelter, to provide building material, etc.
  - Question:—Is it right to destroy the Forest Regions? Why?
- II. HOW OBTAINED
  - Logging
    - Time.
    - Extent.
    - Manner.
  - Camp life of the loggers, etc.
  - Cutting, loading, transportation.
  - Means of transportation.
  - Milling:
    - Location of handling the logs—The sawmill.
    - Manner and process of handling and sawing the logs.
    - Taking care of the lumber and preparation for shipment.
    - Visit a sawmill, if possible.
  - Lumber Yards:
    - Process of handling and caring for the lumber (Visit a lumber yard and find out where the lumber comes from).
    - Kinds shipped, etc.
- III. KINDS
  - Hard Lumber: Name and describe different trees from which hard lumber is obtained.
    - Locate regions in which hard wood is most usually found.
  - Soft Lumber (Same as in hard lumber).
- IV. USE
  - Building Purposes—Houses, barns, bridges, fences, etc.
    - Kinds used—Hard or soft? Why?
  - Furniture:
    - Kinds—Hard or soft (Visit a furniture store).
  - Implements:
    - Kinds—Hard or soft (Visit an implement house). Why?
- V. INDUSTRY
  - Lumber Centers: Where? Why?
    - Lumber as an export. As an import.
- VI. LITERATURE
  - *The Forest Hymn.*—Bryant.
  - *The Lumberman.*—Whittier.
  - *Planting the Apple Tree.*—Bryant.
  - *Woodman, Spare that Tree.*—Morris.
  - *Building of the Ship.*—Longfellow.
  - *The Ship Builders.*—Whittier, etc.

VII. Some Important Trees

- Apple.
- Apricot.
- Ash.
- Basswood.
- Birch.
- Buckeye.
- Butternut.
- Catalpa.
- Cedar.
- Chestnut.
- Elm.
- Hickory.
- Lemon.
- Linden.
- Maple.
- Oak.
- Orange.
- Palm.
- Pine.
- Plum.
- Redwood.
- Sycamore.
- Walnut.
- Willow.

VIII. Related Products

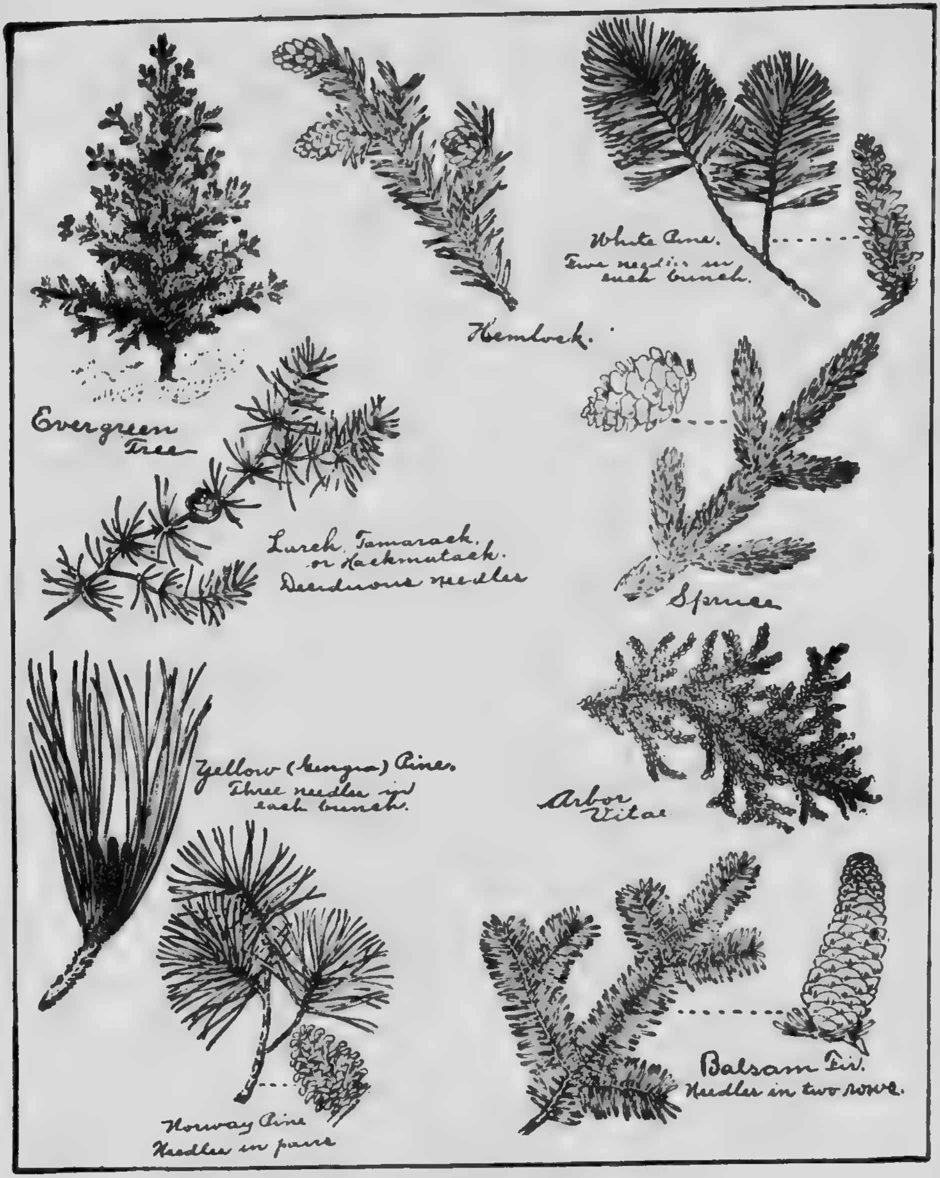
- Turpentine, tar, rosin.
- Rubber, quinine.
- Maple sugar, wood alcohol.
- Fruit, foliage.
- Nuts, nut oil.
- Flowers, perfumes, medicines.

> The groves were God's first temples. Ere man learned
> To hew the shaft, and lay the architrave,
> And spread the roof above them—ere he framed
> The lofty vault, to gather and roll back
> The sound of anthems; in the darkling wood,
> Amidst the cool and silence, he knelt down,
> And offered to the Mightiest solemn thanks
> And supplication.
>
> —*Bryant.*

SEQUOIA TREES

Questions on Forestry.

Define root, trunk, limb, bough, bud, bark, sap, leaf, and heartwood.
Give five uses of forests. Which of these are the most important?
By what are forests destroyed? What is their worst enemy?
Where are the best preserved and the most valuable forests to be found?
What is the extent of the forest reserves in Canada?
State the aim and benefits of the Bureau of Forestry. 1033.
How has the government aided in promoting interest in forestry?
Give a list of fruit trees in your vicinity.
Name some trees from which lumber is made. What is hard-wood lumber?
Where are the forest regions of Canada?
Name some lumber from which furniture is made.
From which trees are the following products obtained: tar, rubber, quinine, nut oil, chocolate, and wood alcohol?
Relate some historical facts in connection with the oak and the elm.
Mention some favorite poems about trees.
What are the largest trees and where are they grown? 2589.
What permanent benefits are derived from the observance of Arbor Day?
In which country are the most dense forests found at present?
Give the origin of the following names: bottle tree, traveler's tree, breadfruit tree, and redwood.
What do you know of the forests in Alaska, the Philippines, Africa, and Norway?
What can you say of the evergreen trees and the Douglass spruce of Canada?


Evergreen Tree
Hemlock.
White Pine. Five needles in each bunch.
Larch, Tamarack, or Hackmatack. Deciduous needles
Spruce
Yellow (Georgia) Pine. Three needles in each bunch.
Arbor Vitae
Norway Pine Needles in pairs
Balsam Fir. Needles in two rows.

EVERGREEN TREES.

Oak.

I. Genus—Cupuliferae (Bearing a little cup).
II. Home.
1. Temperate Zone.
2. All continents.
3. North America—Chiefly.
III. Classification.
1. Deciduous.
2. Evergreen.
Evergreen oak of California.
Live oak of Southern United States.
IV. Description.
1. Size.
2. Shape.
3. Leaves.
4. Flowers.
5. Roots.
6. Wood, bark.
7. Fruit.
8. Soil required.
V. Species—300 or more.
1. Cork oak—Brown in Mediterranean countries.
2. Turkey oak—Bears sweet and edible acorns.
3. White oak—Thrives from Canada to Mexico; valuable for its hard wood.
4. Others.
Bur.
Red.
Black.
Cork.
Gall.
Live.
Barbary.
Swamp.
Scrub.
Pin.
Kermes.
Chinquapin.
VI. Uses.
1. Wood.
Furniture.
Shipbuilding.
Vehicles.
Mechanical appliances.
Construction work.
2. Bark.
Medicine.
Tanning.
Sort of fustian cloth (Inner bark).
Cork.
3. Fruit—Acorns.
Food for cattle, swine, etc.
Some edible for man.
Sweetmeats.
4. Gallnuts.
Medicine.
Ink.
Dyes.
VII. Characteristics.
1. Majesty.
2. Longevity.
3. Strength.
4. Durability.
5. Historical.
King Oak of England.
Charter Oak of United States.

OAK LEAVES AND ACORNS.

The Oak.

Sing for the oak tree, the monarch of the wood,
Sing for the oak tree, that groweth green and good!
That groweth broad and branching within the forest shade;
That groweth now, and still shall grow when we are lowly laid.

The oak tree was an acorn once, and fell upon the earth;
And sun and shower nourished it, and gave the oak tree birth;
For centuries grows the oak tree, nor does its verdure fail;
Its heart is like the iron wood, its bark like plaited mail.
—Selected.

Woodman, Spare That Tree.

Woodman, spare that tree!
  Touch not a single bough!
In youth it sheltered me,
  And I'll protect it now.
'Twas my father's hand
  That placed it near his cot;
There, woodman, let it stand,
  Thy ax shall harm it not!

That old familiar tree,
  Whose glory and renown
Are spread from sea to sea,
  And wouldst thou hew it down?
Woodman, forbear thy stroke!
  Cut not its earth-bound ties;
Oh, spare that aged oak
  Now towering to the skies!

When but an idle boy,
  I sought its grateful shade;
In all their gushing joy
  Here too my sisters played.
My mother kissed me here;
  My father pressed my hand;
Forgive this foolish tear,
  But let the old oak stand.

My heartstrings round thee cling,
  Close as thy bark, old friend!
Here shall the wild birds sing,
  And still thy branches bend.
Old tree, the storm still brave!
  And, woodman, leave the spot;
While I've a hand to save,
  Thy ax shall harm it not.
—George P. Morris.

Questions on the Oak.

How many species of oak can you name which grow in your part of the country?

What do you know of the age of oak trees? 2011.

What are oak galls and for what are they valuable?

Where is the cork oak grown? How is the cork obtained?

Describe the fruit of the oak tree and tell for what it is used.

Name some uses for the wood of the oak tree.

State some characteristics of oak trees.

What interesting historical incidents are associated with oak trees?

What is the significance of the oak leaf?

Why has the oak been called " Monarch of the woods?"

What special variety of oak is grown in California?

Memorize the poem *Woodman, Spare That Tree.*

Where is the live oak found? Describe the evergreen oak.

Why is the bark of the oak valuable in tanning?

(M[illegible]d Book Opp. 110)

VALUABLE NUTS.

1. Pecan: A, sectional view, B, kernel. 2. Brazilnut: 3. Peanut. 4. Filbert. 5. Chestnut. 6. Butternut or White Walnut. 7. **Black Walnut**: A, Sectional view, B, kernel; **C**, English Walnut. 8. Hickory Nut. 9. Almond. 10. Oak, showing leaves and acorn.

Horticulture.

I. DEFINITION: Horticulture is a branch of agriculture. It is the art of cultivating flowers, fruits, and vegetables. These three departments are known respectively as floriculture, pomology, and olericulture.

II. DIVISIONS.
  1. Floriculture.
  2. Pomology.
  3. Olericulture.
  4. Subdivisions.
    A. Amateur—Personal ideals.
    B. Commercial—Commercial demands.

III. ESSENTIAL FEATURES.
  1. Character of soil.
    A. Fruit trees—Rich, dark loam.
    B. Vegetables and [illegible] crops—Sandy loam.
  2. Drainage—Systematic.
    A. Effective cultivation.
    B. Lessen injurious freezing.
  3. Slope of surface.
    A. Facing sun—Warm regions
    B. Away from sun—Northern latitudes.
  4. Choice selection of species of plants.
  5. Fertilization and cultivation.
    A. Suitable fertilizers.
    B. Thorough tilling.
    C. Destruction of weeds, insects, etc.

IV. STRUCTURES.
  1. Hothouses.
  2. Greenhouses.
  3. Pits.
  4. Nurseries.

V. PROPAGATION.
  1. Pollen fertilizing.
  2. Grafting.
  3. Budding.
  4. Seed.

VI. COUNTRIES.
  1. United States—Largest output.
    A. Apples—Leading crop.
    B. Annual yield.
    C. California—First in production of citrus fruits. Annual shipment.
    D. Florida—Second in citrus fruit.
    E. Peaches, pears, tomatoes, bananas.
  2. Canada.
    A. Number of species.
    B. Quantity of fruit.
    C. Exports.

The Seven Ages of a Tree.

A very practical way of naming and distinguishing trees is as follows:

1. Young trees which have not reached a height of three feet are seedlings. They are called seedlings in spite of the fact that any tree, of whatever age, if it grew from a seed, is called a seedling tree.

2. Trees from three to ten feet in height are small saplings.

3. Trees from ten feet in height until they reach a diameter of four inches are called large saplings.

4. Trees with a diameter ranging from four to eight inches are called small poles.

5. When the diameter is from eight to twelve inches, the trees are known as large poles.

6. Trees that have a diameter ranging from one to two feet are called standards.

7. All trees over two feet in diameter are known as veterans.

It is important to remember that all these diameters are measured breast high, or at the height of a man's chest, about four feet from the ground. In forestry this is, roughly speaking, the general custom.
—Gifford Pinchot.

The Fruit Tree.

The Tree's early leaf-buds were bursting their brown,
"Shall I take them away?" said the Frost, sweeping down,
"No, leave them alone
Till the blossoms have grown,"
Prayed the Tree, while he trembled from rootlet to crown.

The Tree bore his blossoms, and all the birds sung;
"Shall I take them away?" said the Wind as he swung.
"No, leave them alone
Till the berries have grown,"
Said the Tree, while his leaflets quivering hung.

The Tree bore his fruit in the mid-summer glow:
Said the girl, "May I gather thy berries now?"
"Yes, all you can see:
Take them, all are for thee."
Said the Tree, while he bent down his laden boughs low.
—Bjornstjerne Bjornson.

Questions on Horticulture.

What is horticulture? Name its chief divisions. 1325.
What are the essential features to be observed?
Explain the effect of systematic drainage upon the plants.
What benefits are derived from guarding the sloping when planting?
Why is a slope from the sun preferred in a cold climate?
Name three kinds of grafting. Explain the process of budding.
What is a nursery and where are nurseries maintained?
How has floriculture been greatly facilitated within recent years?
What is the leading fruit crop in the United States?
Where are the leading vineyards of North America? Of Europe?
What is the annual yield of fruit in California? In Florida?
In the exportation of what fruits has Canada made special progress?
Write a complete list of the trees and shrubs that should be grown in a first-class orchard in this vicinity.

Course of Study in Agriculture.

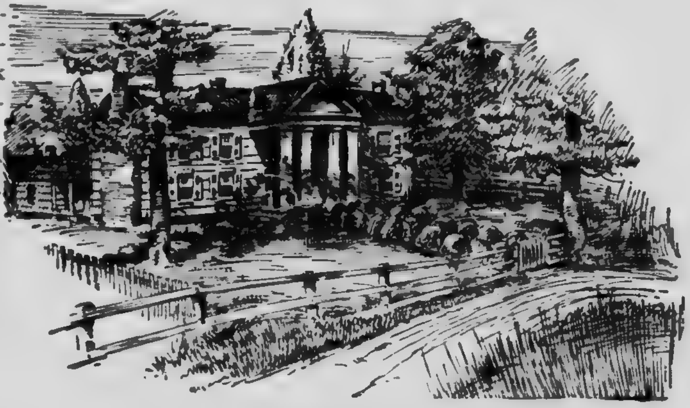
OBJECTS TO BE OBTAINED.

1. To stimulate a general interest in agriculture.

2. To emphasize the importance of associating school work with the practical duties of the farm.

3. To stimulate interest in successful business methods, thereby inducing the student to avoid failure in life by teaching him to work for wholesome results.

4. To induce the student to become methodical in acquiring information for himself, teaching him to be industrious and energetic in searching for reasons and in studying the plants by which the life in the country is beautified.



TYPICAL FARM HOME IN THE SOUTH.

5. To instill a love for the soil, for the care of animals, and for the occupation of farming.

6. To impress upon the mind of youth the importance of agriculture and the advantages enjoyed by those who live upon the farm.

Successful work in teaching the elements of agriculture depends to a large extent upon the teacher. It requires not only tact and enthusiasm, but to these must be added interest and industry in searching for the objects and information which are particularly fitted for the individual student. The aim should be to make the instruction a means of connecting the school work with the practical side of the business engaged in by the farmer. To do this successfully, the teacher must correlate history, literature, and other branches with the topics taught. Incidentally it is well to point out the many advantages enjoyed at present by the farmer, who has come to be interested in good roads, telephones, rural free delivery, automobiles, and other conveniences of a progressive age.

Experiments in the treatment of seeds and plants should be features of the exercises from time to time. These experiments should include both oral and written work. Information upon the different topics will be found under appropriate titles in "The New Teachers' and Pupils' Cyclopaedia," hence this work should be consulted in regard to the topics as they come in the lessons from time to time. The best composition and other written work prepared during the year should be preserved.

First Month.

Prepare a sectional map of your school district, showing the leading physical features, such as creeks, elevations, and valleys. Indicate on the map the land which is best fitted for cultivation, for pasturage, and for meadows. Reasons should be stated why land is particularly fitted for one or more of these purposes.

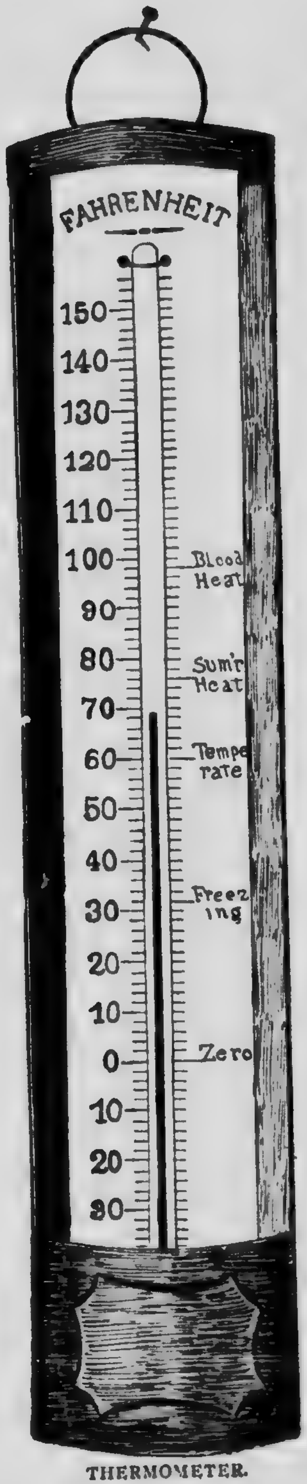
Obtain several kinds of soil for examination, such as may be found in different places near the school house. Explain how soil came to be formed. Notice what kind of a subsoil is found in the vicinity. Study different localities in the neighborhood and obtain soil in which clay, sand, and gravel predominate. Endeavor to make it plain that plants must have a suitable soil as well as moisture and warmth in order to thrive and yield seed or fodder.

Study the relative interest taken by farmers in the neighborhood in different classes of crops. Make a list of the principal products, such as hay, corn, wheat, oats, and potatoes. Study the results of planting in rich loam and in a very sandy soil, making it an object to learn what plants may be grown to the best advantage in the locality.

Take a spade and dig in the ground to see how deep the soil is in different places. Make an examination of several places, first on an elevated point and next in a valley. Demonstrate that the rains wash much of the fertility from the slopes into the low land, where the richest soil is found. Notice the darker color of the soil in the valley, showing that it contains a considerable portion of alluvial matter.

The question naturally suggests itself, whether soil always maintains its fertility. In this connection may be shown the advantages of rotating crops and the benefits which result from the use of fertilizers. The same crops cannot be grown on the same ground from year to year, but in some soils it is possible to maintain fertility for many years by rotating the crops. In other soils it must be maintained by manures and still in others by commercial fertilizers. Explain the value of clover and other deeply rooted plants to stimulate fertility of the soil.

Have the pupils prepare a list of the leading farm crops grown in the vicinity. Study the lists



THERMOMETER.

and select the eight leading crops for discussion in class. Endeavor to learn the uses, either locally or after transportation, of these crops. Fruits and vegetables grown in the vicinity should be studied in a similar manner.

A collection of the grains and seeds produced in the vicinity should be preserved with care. Each collection should be placed in an envelope or a pasteboard box, then labeled with the name of the collector and the name of the seeds, after which they should be placed where they can be secured for planting in the spring.

Record of Weather and Rainfall.

WEATHER. Rule a blank book so as to have a full page as a record sheet for each school day of the year. The temperature is to be recorded in this record three times each day, at 9 A. M., at noon, and at 4 P. M. In the same record are to be recorded the directions of the wind, whether it is cloudy, and the amount of rain or snow. The record is to be kept by one of the pupils, who is to have an alternate, and the latter is to be in charge the second month. No one is to have charge of the record more than a month at a time. In this way all the older pupils will become familiar with the plan. The following is suggested as a suitable ruling of the

Weather Record:

Date	Temperature				Clouds			Rain or Snow			Direction of Wind		
Sept.	9 a. m.	Noon	4 p. m.	Mean	9 a. m.	Noon	4 p. m.	9 a. m.	Noon	4 p. m.	9 a. m.	Noon	p. m.
4	50	65	60	58.3	..	C	C	..	R	R	N.	N. E.	—
5	65	80	75	73.3	C	..	..	R	..	..	E.	W.	W.
6	60	78	72	70.0	C	..	..	..	..	..	N. W.	N. W.	N. W.

RAINFALL. Have the tinner make a simple rain gauge of two parts, one large and funnel-shaped to catch the rain and the other small and sufficiently deep to measure it. The former should have an exposure, or diameter, three times greater than the latter. This is desirable for the reason that many rainfalls are so slight that they cannot be measured in the same pan in which the water falls.

The rule for measuring the water should be finely graduated so as to indicate small quantities. Only one-ninth of the measurement is to be counted, as the square of the diameter of the receiving vessel is nine times greater than the measuring vessel. Snowfalls must be melted and measured as rain. The rain gauge should be set in the open, where gusts of wind will not drive the falling drops into it or away from it, owing to the proximity of trees or buildings. It should be held firmly in position by stakes and the receiving vessel should be set so all the water will flow into the one below.

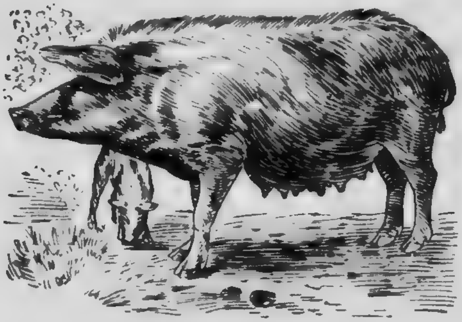
QUESTIONS:—Explain the meaning of soil and of subsoil. What is meant by "rotation of crops?" Mention three cereals and five vegetables grown in the neighborhood. Why does the soil lose part of its fertility by constant cultivation unless fertilizers are used? Where is the richest soil, on the hill-tops, on the slopes, or in the valleys? Draw a map of a section of land in the neighborhood, showing the farms and the names of those who reside on them.

Second Month.

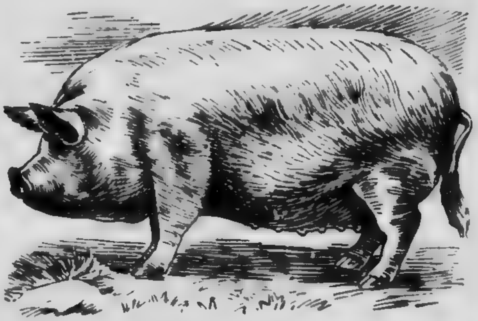
Make a study of the insects that are found in the neighborhood and determine which are helpful and which are detrimental to the farmer. It is well to prepare for this work by collecting specimens as they are obtainable throughout the growing season. Have the pupils search in literature for statements regarding the more common insects.

Take up the study of the best known weeds and their habits of growth. Make a collection of their seeds and parts of the plants. These should be preserved in the same way as the seeds mentioned in the outline for the first month. Prepare a list of the weeds that spread only by seeds, that spread chiefly by growth from the roots, and that spread both by seeds and growth from the roots. Which of these are most obnoxious? Should the weeds growing on highways be destroyed before the seed ripens?

Cut several apples in halves from the blossom end to the stem. Select apples of different kinds for this purpose. Speak of the varieties, in what respects they differ from each other, and the purposes for which they are best adapted. Have each pupil make a drawing of at least one piece, requiring that the parts on the cut side be shown as clearly as possible. In future lessons extend this work until the students are able to draw both entire apples and parts cut in different sizes.



UNIMPROVED HOG.



CHESTER WHITE FEMALE.

Prepare a complete list of the domestic animals reared in the vicinity. To this list add a number of useful animals common to Northern Canada, Arabia, and Egypt. Which animals are raised only to work, which for their work and meat, and which solely for products after they have been slaughtered? Make a study of the products obtained from animals reared in the neighborhood.

Study some cereal, such as corn or wheat. When, how, and for what purpose is it planted? How many crops may be grown in succession on a given piece of land? Speak of the best way to rotate the crops. Give conversational lessons in how to cultivate and harvest corn. Besides being a staple article of food for animals, for what is corn used? Where are the largest fields of corn grown? Mention different kinds of corn, such as *dent corn, pop corn, Kafir corn,* and *sweet corn,* and study the uses of each.

Study the neighborhood and determine whether it may be classed as having been a prairie or a timbered section. Notice what effect settlement has had as

regards the growth of trees. Prepare a list of the trees now growing in the vicinity and classify them as to size, form of leaves, kind of seed, color and hardness of wood, character of bark, and uses and value of seed and wood.

Review the weather record for the first month to determine how many days the sun shone. How much warmer was it during sunshine than during cloudy weather? Make an estimate of the total rainfall during the previous month. Was the precipitation normal for this neighborhood?

Draw a map of the township, showing the highways, school houses, streams, timbered belts, if any, and churches. What is the name of the civil township? Explain the difference between a civil township and a congressional township. Give the number and range of this township.

QUESTIONS:—Name the most useful insect found in this section. Prepare a list of the twelve most injurious insects common to the neighborhood. How do weeds come to grow in the fields from year to year? In what respects have the improvement of the farms changed the general aspect of this neighborhood? How are the oak and willow propagated? Which is the most useful for human food, corn, rice, or wheat? Name five kinds of apples and four kinds of corn.

Third Month.

Study the food and shelter of farm animals. Make it clear that suitable shelter is as important in raising live stock as the food itself. It is easier and less expensive to keep a horse in good condition when it is kept in a well-constructed barn than when it is exposed to the cold of winter. This is true likewise of all classes of animals.

Barns, hog houses, kennels, and henhouses should be built with the view of securing good sanitation. They should protect against cold and at the same time have plenty of light and ventilation. Since all animals are subject to disease, it is important to care for them with the greatest possible concern. The profits are measured largely by good housing and judicious feeding.

Write essays on the subjects Corn, Wheat, Rye, Cotton, Tobacco according to the following outline:

1. General description.
2. Planting.
    a. At what season.
    b. Preparation of the ground.
    c. How planted.
3. Cultivation.
4. Diseases and insects.
    a. Name and character of.
    b. Damage to plant and seed.
    c. Means of prevention.
5. Harvesting and use.
    a. Machinery employed in harvesting.
    b. Yield per acre in bushels or pounds.
    c. How prepared for use in commerce.

Direct attention to the need of drainage on the farm. The tile drain furnishes the best kind of drainage in mose instances. Other drains, especially open ditches, may wash too large or may become filled with grasses and weeds. They cause a waste of land, while tile drains make it possible for all the surface to be cultivated.

In some places it is necessary to provide against overflows. This is done by building levees and dikes. Where are the largest levees in the United States?

Irrigation, on the other hand, is a system of conducting water by ditches and canals to land that naturally is too dry for farming. Question the pupils about the arid regions of Canada and the United States.

Take measurements of at least three horses as a means of studying the different proportion of parts. Call attention to the height at the withers, the girth just back of the shoulders, the girth at the flank, and the length from the withers to the setting of the tail. Define hoof, fetlock, hock, cork, mane, gullet, poll, muzzle.

Describe the food that is best suited for chickens. When do hens lay the most eggs, in which season? Why should hens be supplied with gravel or oyster shells? Draw a sketch of a suitable henhouse and write a description of it. Will hens lay eggs in the winter?

Write an essay on "Beauty of Life on the Farm." In this article make mention of good roads, the telephone, interurban railways, landscape gardening, and ornamental trees. Preserve the best essays for the school exhibit or the county fair. One or two of those may be sent for publication to a newspaper.

QUESTIONS:—What can you say of the value of shelter for animals? What is irrigation? Explain different kinds of drainage. How many bushels per acre constitute a good yield of corn? What is the difference between drilling wheat and sowing it broadcast? Having suitable facilities, is it as profitable to raise chickens as it is to rear swine? Can sheep feed on shorter grass than cows?

Fourth Month.

Life on the farm in the winter is considered pleasant for many reasons. The farmer has garnered his grain and filled his mow with sweet-scented hay. His cellar contains the fruits of the orchard and the garden. He is now enjoying the products of the rich acres that were made fertile by wise husbandry. Although he has stored the food and provisions for his family and his animals, the hens still continue to lay fresh eggs and the cows yield a goodly quantity of milk for the household. What he consumes on his table is the pure and unadulterated product fresh from nature.

Compare with the food of the farmer the products that come to the tables in the city. The eggs and butter are shipped from the country points to be kept in cold storage, where they often become stale. However, the inspection of food and food products has been the means of greatly improving the quality. In the large city, vegetables and fruits are sold in a fresh condition the entire year. This is made possible by the advantages of rapid transportation facilities in all sections of the country. Meat, flour, and other staple products are nearly the same in the city and on the farm.

The farmer feeds for the market a large part of the winter. This line of work, together with marketing the surplus product and preparing for the coming season, keeps his time well occupied. Farm animals need especial care during cold and wet weather. It is very essential that the live stock should be attended with sufficient care to have it in good condition in the spring.

A horse should be fed both hay and grain throughout the year, except when it is kept in a good pasture, but relatively more grain is required when the horse is working. Give reasons why a horse cannot do heavy work when it is fed only on hay. The horse should have plenty of pure water three times each day.

Cows become more docile when they are dehorned. This should be done when the calf is about a week old. Cattle with horns must be kept tied, or stanchioned, else the animals will injure each other by horning. Corn, oats, barley, and hay are the principal food of cattle. Beets and beans are fed to cattle in some countries. Cattle, camels, and goats are grown for meat and milk, but these products derived from cattle are the most important.

Write an essay on Potato and make a drawing to show the plant. What other vegetables besides the potato are raised in the neighborhood? Tell when and how the potato is planted. In localities where the potato is grown in large fields, it is planted and dug by machinery. How are potatoes dug by farmers and gardeners in this vicinity?

Explain how corn is planted, whether in hills or drills. How many feet apart are the rows of corn? If planted in hills, how many kernels are dropped in a hill? Write a description of the corn plant, mentioning the seed, the roots, the leaves, the tassel, and the ear. Describe the cob and tell how many rows there are in a particular ear which you have studied. Which Province of Canada produces the largest amount of corn? Name the five foremost corn-producing states of the United States.

QUESTIONS:—What can you say about the life of the farmer in winter? Have the telephone and rural free delivery of mails made farm life pleasanter? How many times each day should a horse have water? Does it pay to be kind to farm animals? Is dehorning a benefit to cows? In some localities corn is planted in hills and in others in drills, explain the reason. Which animal is the most important for the production of milk? Of what other animals is milk used?

Fifth Month.

Make an examination of several farm animals to study the difference in the coverings of their skin. Learn of what uses hair and feathers are in the market. Which feathers are the most useful, those of chickens or of ducks and geese? With what are sheep and hogs covered?

Learn of some farmer who is feeding steers in the neighborhood and make the following record:

1. Number and breed of steers.
    a. Whether Shorthorns, Herefords, etc.
    b. Color; whether red, spotted, etc.
2. Food and water.
    a. Classes of food.
    b. How and when fed.
    c. Watering, how often.
3. How many hogs are fed in the same yard?
4. At what age should stock be marketed?

Milch cows should be well fed on good hay and some grain in the winter. The richness of the milk depends partly on the breed of cows and partly on the food. Which is larger, a cow or an ox? Is a cow profitable for any other purpose besides milking?

Study the shade trees of the neighborhood. Which are best for shade and why? The soft maple, cottonwood, and boxelder are planted very extensively in some sections for shade because they are hardy and grow rapidly. Mention other trees that are planted for shade. What can you say of the oak, hard maple, and mahogany as ornamental trees?

Collect the names of all the varieties of apples grown in the vicinity.

Describe the fruit of the early apples and tell for what purposes the different species are best adapted. What is a winter apple and how does it differ from a fall apple?

The parts of plants are known as the root, stem, and leaves. Define each and explain the purposes it serves in the life of a plant. Explain how the food is taken up by the rootlets, is conveyed through the stem, and is then modified by the action in the leaves. Give a lesson on how plants receive nourishment both from the soil and the air. If corn is cultivated very close to the stem when it is quite large the leaves will droop. Explain the reason.

QUESTIONS:—For what are the bristles of hogs used? Speak of the difference between the Holstein and the Hereford cow. Mention two grades of cattle that are noted for giving milk. Why is butter of a deeper yellow color in the spring than in autumn? Name and define the different parts of a plant. Should corn be cultivated close to the roots when it is large?

Sixth Month.

Some plants are flowerless, but the greater number of common plants have flowers. Explain what a flower is and what purposes it serves. Make a study of the stamen and pistils, the stigma and anthers, the pollen, and the ovary. Make a careful study of each of these parts as to their structure and the purposes they serve. What is meant by fertilization and by cross fertilization?

Make a study of the propagation of plants by seeding, cutting, and budding. How are corn, clover, the geranium, and the willow tree propagated? What is layering and of what use is it? Is the selection of seed an important factor in farming?

Dry farming, or the Campbell System of Farming, is recommended for dry seasons and for arid regions. Its aim is to till the soil so the moisture is used to the best advantage. This is done by cultivating the growing crops frequently and in such a manner that the upper layers of the soil are well pulverized. This prevents excessive evaporation by closing the pores. Dry farming has been a great benefit to the arid regions of Canada and the United States.

Study the different grasses that are grown for hay in the neighborhood. Collect samples of the native grasses that are valuable for hay. In the arid sections of North America, as from Alberta to Texas, the buffalo grass is an important plant for the reason that it is adapted to a dry climate. Although it is short, it makes fine pasturage and in some localities is cut for hay. Blue stem, or blue bent, next to buffalo grass, is considered of great value. It thrives best in moderately moist soil, but is found in the low and more fertile sections of arid districts. Bunch grass, mesquite, rye grass, and wire grass are common names of other native grasses.

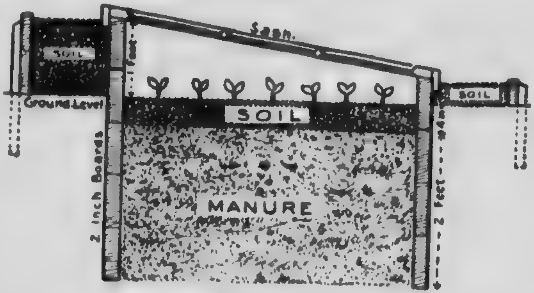
The plants cultivated extensively for hay include timothy, clover, alfalfa, redtop, millet, blue grass, brome grass, and sorghum. Study the grasses cultivated in this neighborhood and learn what advantages they possess over native grasses. Visit a hay mow and observe how the farmer preserves hay for future use.

QUESTIONS:—What is a flowerless, or cryptogamous, plant? In what way are insects of importance in the growth of plants that bear flowers? Explain what is meant by budding, pruning, and grafting. When and where is dry farm-

ing of value? Why is clover a valuable plant aside from its use for hay? Describe buffalo grass and tell where it is found. What native grasses are common to this vicinity? When should grass be cut for hay? For seed? Speak of the feeding value of clover and timothy.

Seventh Month.

Prepare a hotbed as shown in the illustration. Plant some seeds that are commonly grown in the vicinity, such as beans, peas, corn, and potatoes. The plants should be studied as they grow.



HOTBED.

If it is not practicable to conduct a small hotbed, then a box of good soil may be prepared in one of the windows of the schoolroom. It is well to plant a few weeds to observe their growth in connection with that of the useful plants. Study plants that live only one year and some that live from year to year. What are such plants called?

Plants as well as animals are subject to diseases. Study the most common diseases known in the vicinity according to the following outlines:

1. Diseases of plants.
    a. Causes and symptoms.
    b. Fungi: Rot, smut, rust, brand, mildew.
    c. Insects: Eelworm, phylloxera, chinch bug, aphis.
    d. Bacteria and physiological diseases.
2. Prevention or cure.
    a. Destroy affected leaves, twigs, or fruit.
    b. Kill spores on seeds before planting.
    c. Select seeds and plants that resist disease.
    d. Use tar, paint, etc., to cover wounds.
    e. Spray with poison to kill insects.
    f. Rotate crops to best advantage.

Diseases of Animals.
- a. Prevention of; symptoms.
- b. Organic and functional diseases.
- c. Diathetic and enthetic diseases.
- d. Bacteria, Effect of on animals.
- e. Tuberculosis, Treatment of.

Common Diseases.
- a. Horse—Colic, spavin, heaves, bots, bronchitis.
- b. Cattle—Tuberculosis, plague (Rinderpest), blackleg, milk fever.
- c. Swine—Cholera, worms, quinsy, trichina.
- d. Sheep—Scab, rot (flukes), tetanus.
- e. Poultry—Gapes, cholera, tapeworms.
- f. Dog—Hydrophobia, distemper, tuberculosis.

Every farmer should give attention to mixed farming. That is, he should raise crops and rear animals. This enables him to cultivate the ground to the best possible advantage, since the feeding of stock enriches the soil and increases the yield per acre. It is a mistake to give attention only to the growth of grain and grass crops and then sell the products. This kind of farming gives rise to what is known as *transportation of the soil*, meaning that the richness is taken out of the land and transported to some other place or even to some other country.

The farmer is protected by a diversity of crops and animals. If the season is unfavorable to one or two particular crops, the others may thrive. Besides, the markets are sometimes glutted by certain classes of farm and live-stock products, hence the farmer who engages in mixed farming will be sure to get good prices at least on certain products.

Prepare a plat of some township to show all the established highways. On this plat indicate the roads that are good, that are passably good, and that are poor. Study the materials in the vicinity that may be utilized in building good roads.

Noted roads built by the Romans in ancient times, such as the Appian Way, are still in use. They transported materials long distances, even without railroads, and their roads have endured fully twenty centuries. Learn what you can about concrete, macadam, asphalt, and brick paving.

QUESTIONS:—What is a hotbed and why do plants grow rapidly in a well-constructed one? Explain the meaning of fungus diseases. Name six diseases that are common to plants and six that are common to animals. What is meant by the transportation of the soil? Is it important to have good roads? Which is cheaper, to build a good road or to repair a poor road from year to year? Describe the Appian Way and tell how it was built.

Eighth Month.

Plant one or more trees. Prepare the ground to receive the trees to the best advantage. Notice the proper depth for planting, spread the roots as much as possible, and prune the limbs so as to balance the tree as nearly as possible. Notice the buds and the new leaves as they appear in the spring.

In a dry season a barrel filled with water may be set near a newly planted tree, the barrel having a small opening near the bottom so the water can run out and constantly irrigate the roots. Weeds should not be permitted to grow near the tree. The ground should not be cultivated when it is so moist that it will stick to the tools.

Make a study of tools and implements used by the farmer, such as the plow, harrow, wagon, cultivator, reaper, and threshing machine. How did the ancients thresh their grain? Name the utensils necessary in making a garden.

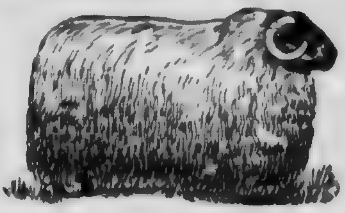
Not many years ago D. Ward King of Maitland, Mo., devised a drag to smooth the roads. This is known as the King Road Drag. It is made of two pieces of heavy timber, fastened together with crossbars, and one or both of the timbers have an iron bar to protect the wood and cut the surface of the ground. A chain is attached to the drag in such a manner that the timbers will point in a diagonal direction across the highway. When the horses pull the drag, it has a position so the dirt is worked toward the middle of the road. This drag in an

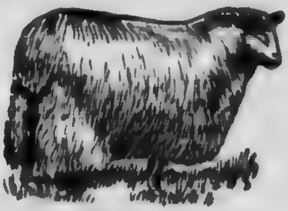
(Method Book, Opp. 122)

FIELD OF SEED ONIONS IN BLOOM IN THE SANTA CLARA VALLEY, CALIFORNIA

improved form is now used very extensively. It works best after a slight rain, or when the surface is moderately moist.

MERINO RAM.


BLACKFACE HIGHLAND RAM.


CHEVIOT EWE.

The rise in the value of land has had a marked influence upon farming. Formerly much of the land was allowed to grow up in weeds. It is now the object to utilize every foot of the land for some definite purpose. The swamp and wet lands are being drained, the scrubby tracts are being cleared, and the dry districts are being irrigated. Economy in the expenditure of energy pays a large dividend in farming. Study the neighborhood to learn how farming and stock raising can be improved.

The purpose of the farmer should be to enrich the soil from year to year. If forty bushels of corn per acre was a good crop when the soil was virgin, the yield should be even better at present. This will depend entirely upon how the land is cultivated and what amount of fertilizer is used. We cannot expect the soil to maintain its virgin fertility indefinitely, to yield without recompense, but must do our part if we would enjoy the fruit that is in store for the industrious and the intelligent. The unlearned savage may get small returns from the soil, but a richer harvest is in store for the educated agriculturalist of modern times.

Let us learn from the polder farms of the Netherlands, where the soil has been cultivated with growing success for more than five hundred years. Once the bottom of the sea, it is now the richest farming district in the world. Let us profit by the careful husbandry of Switzerland, where the alluvial soil is carried in buckets from the valleys to enrich the higher slopes and hillsides. When we take all this into account, when we consider how waste has been turned into productiveness, we must realize the vast possibilities of agriculture in this country.

QUESTIONS:—In planting trees, should the roots be spread apart or packed closely together? Should the ground near newly planted trees be kept clean so heat and light may penetrate the soil? Why? What is a King Drag? Has the rise in the value of farm lands had a beneficial influence upon farming? Can the soil be enriched so it will produce more than when it was in a virgin condition? What is polder? Contrast farming in Europe with farming in America.

Ninth Month.

Review the lessons for the previous months of the year. Make a careful study of the weather record. What was the average temperature in November? In February? In which month did the sun shine the greatest number of days, in September or in March? How much in inches was the rainfall for the past six months?

Observe whether horses or mules are most numerous in the neighborhood. Study these animals so as to learn which requires the larger amount of grain. What are the prices of good work horses and mules? Write a description of these animals, making it a point to explain the physical difference between them.

Make a study of young farm animals at the age of one and two years. Which will weigh more at one year old, a colt or a steer? Do horses and cattle lie down and get up the same way? At what age is it most profitable to market hogs? How much should a thrifty hog weigh at that age?

Study the leading farm animals in the neighborhood, using as a basis as nearly as possible the following

Outline on the Horse.

I. DESCRIPTION.
  a. Height, weight, covering.
  b. Head, ears, mane, tail.
  c. Legs and hoof; structure and form.
  d. Body—Skeleton, organs.
  e. Beauty, grace, docility.
II. CHARACTERISTICS.
  a. Sense and intelligence.
  b. Strength, speed, longevity.
  c. Age at which broken for work.
III. CLASSIFICATION AND USES.
  a. Draft, race, coach, riding.
  b. Farming, draying, racing, traveling.
  c. Utility in war and military maneuvers.
IV. FOOD—Hay, corn, oats, barley, beans, grass, etc.
V. TREATMENT.
  a. Feeding and watering.
  b. How broken for work.
  c. How and when shod.
VI. BREEDS OF HORSES.
  a. Draft—Clydesdale, Percheron, Belgian.
  b. Racing—Bashaw, Hambletonian, Morgan.
  c. Coach—German Coach, Hackney, French Coach.
  d. Ponies—Shetland, Galloway, Indian.
  e. Hybrid—Mule or donkey.
VII. THE HORSE IN LITERATURE.
  a. Black Beauty—*Anna Sewell.*
  b. The Arab's Farewell to His Steed—*Caroline Norton.*

BELGIAN HORSE.

Questions on the Horse.

Compare the value of the horse to that of the camel.
Speak of the fossils of horses and tell where they are found.
What country produces the most beautiful breed of horses?
Mention the leading breeds of horses found in this vicinity.
Did the early European explorers find horses in America?
From what source did the wild horses of South America originate?
What can you say of the docility of the horse?

Practical Farming.

Come forth into the light of things,
Let Nature be your Teacher.
—*Wordsworth.*

THE practical farmer is a *business man* in the literal sense of the term. His aim is to live and prosper—to educate his family and to enjoy the blessings which come from being in close touch with nature.

PROF. P. G. HOLDEN (born in 1855), formerly instructor in agricultural colleges in Michigan and Iowa and conductor of the first railway train to carry agricultural instruction to farmers.

No practical farmer will depend entirely upon one line of enterprise—that is, to raise only one kind of animals or cultivate one class of crops. He will make his enterprises varied, each related as closely to the other as possible, but he will avoid entirely the tendency to engage in several lines of business and make all a failure. For instance, the farmer who engages in diversified farming and at the same time runs a well drill, a threshing machine or a saw mill, usually fails in the end to acquire the success which would be his if he engaged only in diversified farming in a scientific way.

The following outline contains a list of the topics for study in practical farming, giving suggestions on the more important subjects which are involved in this enterprise.

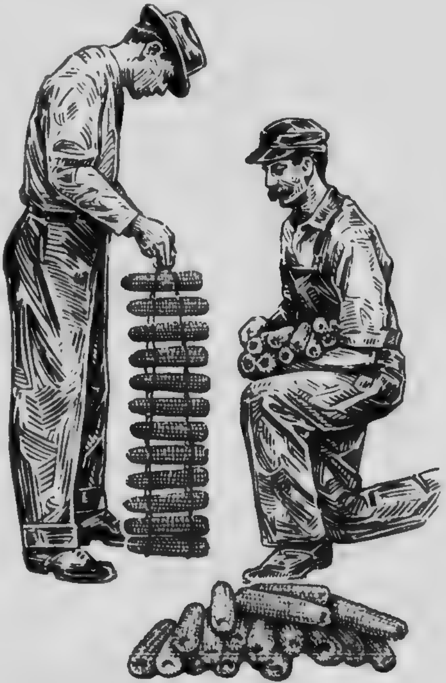
BEES—3 lessons (See page 22).
1. Kinds, description, life history.
2. Hives, bee swarms, hiving.
3. Feeding bees, care of honey, honey as a food.

BIRDS—3 lessons (See page 25).
1. Feeding habits.
2. Beneficial and harmful birds.
3. Protection and extermination.

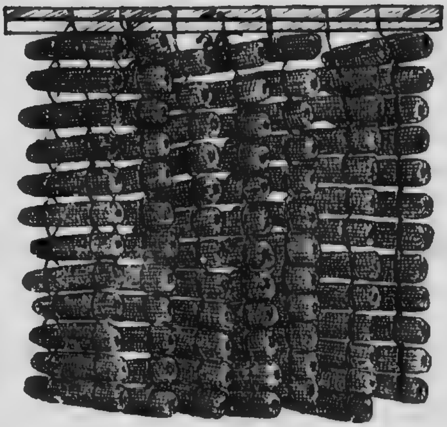
CATTLE—5 lessons.
1. Beef and dual purpose types. Breeds. Characteristics.
2. Dairy type.
3. Feeding and care of cattle.
4. Butchering, cutting and curing.
5. Beef as a food. Cooking.

CONVENIENCES FOR THE FARM AND HOME—2 lessons.
1. For the farm. 2. For the home.

CORN—38 lessons (See page 91).
1. Examination of an ear of corn (roasting-ear stage).
2. Field lesson,—counting the stand.
3. Class report on field lesson, counting the stand.
4. Reports on counting the stand in the home field.



Use binding twine in preparing seed corn to be hung up. No two ears should touch.



Section in a room where seed corn has been hung to dry and keep until spring.

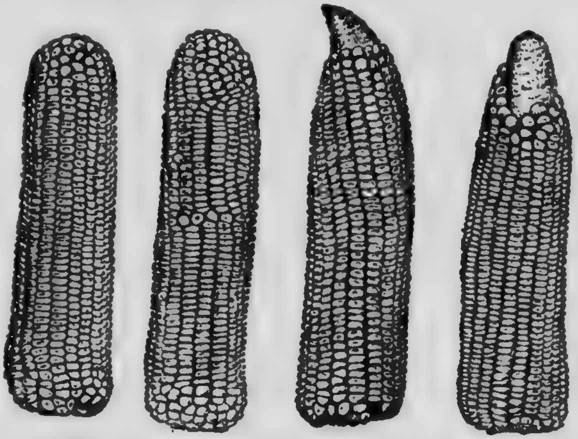
5. **Desirable characteristics of the corn plant.**
6. Selecting corn in the field for seed or exhibition.
7. Storing seed corn.
8. Pupils' reports on home procedure of seed corn handling.
9. Field lesson,—determining yield according to number of ears.
10. Class room work based on preceding field lesson.
11. Field lesson,—finding out the best stand of corn.
12. Class room work based on preceding field lesson.
13. Corn products.
14. Lesson on the parts of the corn kernel.
15. Corn history, types, varieties.
16. Securing and preparing samples of corn for judging in school.
17. Judging corn (See corn score card).
18. Judging corn; *Will it ripen?*
19. Judging corn; *Will it grow?*

CORN SCORECARD

Points		Score	
Trueness to type of breed characteristics	10		
Shape of ear	10		
Color: (a) Grain	5		
(b) Cob	5		
Market condition	10		
Tips	5		
Butts	5		
Kernels: (a) Uniformity of	10		
(b) Shape of	5		
Length of ear	10		
Circumference of ear	5		
Space: (a) Furrow between rows	5		
(b) Space between kernels at cob	5		
Percentage of corn	10		
Total	100		

The standards upon which the good and bad points of corn are rated are outlined in the scorecard. Although the scorecard is not in general use in the showring, whether it be for grain or livestock, there is no better or more rapid method of learning to judge corn than practice in scoring. Most agricultural colleges teach judging of grain and live stock with considerable preliminary practice in scoring. This work with different qualities of grain helps in fixing an ideal in the mind by which the good and bad points are readily recognized and their relative importance properly estimated.

20. Judging corn; *Does it show improvement?*
21. Practice in scoring and judging corn.
22. Methods of improving corn.
23. Crop rotations.



On the left are two ears of white corn which were developed by careful selection from the original types on the right. Notice how the ends are filled with kernels. It is possible to greatly increase the yield if the right care is exercised in selecting the seed.

24. Place of corn in rotation, and why.
25. How to make corn germination boxes.
26. Testing seed corn.
27. Reports on tests at home.
28. Study of the young corn plant.
29. Requirements of the young plant.
30. Grading seed corn.
31. Testing the corn planter.
32. Purposes of the seed bed.
33. Preparation of the seed bed.
34. How to plant corn.
35. Cultivation of corn.
36. Animal pests in the corn field and their destruction.
37. Weeds in the corn field and their prevention.
38. Insect enemies of corn and their treatment.

Farm Management.

1. Choice of crops and animals to be raised.
2. Division of farm into field, pasture, meadow, etc.
3. Borrowing and lending implements. Trading labor.
4. Buying and selling. The home market. Mail orders.
5. Utilization of by-products and waste materials.
6. Rural roads.

Feeds and Feeding—2 lessons.

1. Classes of foods; 2, Balanced rations.

Forage Crops—2 lessons.

1. Kinds and characteristics; value.
2. Culture.

Hogs—6 lessons (See page 116).

1. Types and breeds.
2. Feeding. Growth and fattening.
3. Diseases. Prevention and cure.
4. Butchering, cutting, curing.
5. Choice of cuts, cooking.
6. Care of sow and pigs.

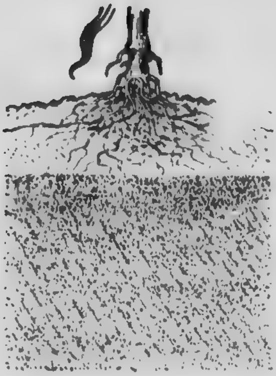
Home Sanitation—6 lessons.

1. Disposal of garbage.
2. Flies and mosquitoes.
3. Drainage.
4. Water supply. Wells, springs, cisterns.
5. Farm buildings. Location, convenience, utility, care of.
6. Back yard. Sanitation of barns, feed lots and poultry houses.

Horses—5 lessons (See page 124).

1. Names of various parts of the body.
2. Types and breeds.

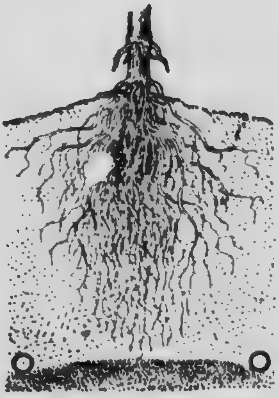
3. Unsoundness and diseases.
4. Care and use.
5. Judging.



This cut is to show that wet, undrained land does not permit the roots of a plant to penetrate down deep into the ground.

HORTICULTURE—15 lessons (See page 111).

1. Caring for the fruit crop.
2. Canning and preserving fruits.
3. Care of winter vegetables.
4. Cooking of vegetables.
5. Gathering and storing garden seed
6. The hot bed and cold frame.
7. The tomato.
8. The home garden.
9. Buying and transplanting young trees and shrubs.
10. Pruning.
11. Propagation from cuttings.
12. Grafting and budding.
13. Spraying.
14. Beautifying the home grounds.
15. Identification of young plants.



In well drained land the roots of the corn penetrate deep. This will make a better crop. Contrast this with the roots in the illustration where the land is not drained.

INSECTS—7 lessons.

1. Collection of insects and examples of their work.
2. Classification as injurious and beneficial.
3. Identification by means of depredations.
4. Life history of insects.
5. Methods of extermination.
6. Parasites infesting live-stock; treatment.
7. Insects of garden; treatment.

MACHINES—4 lessons.

1. Kinds and purposes, construction, operation.
2. Detailed study of some implement.
3. Care of implements and tools.
4. Workshops and tool kits. Repair work.

MILK AND ITS PRODUCTS—7 lessons.

1. Milk testing.
2. Records of cows. Profit and loss.
3. Cream starting and ripening.
4. Butter making.
5. Sanitation in the care of dairy products.
6. Cleanliness in barns and in handling cows.
7. Uses of milk in the home.

OATS—5 lessons.

1. Detection and prevention of rust and smut.
2. Judging different varieties.
3. Choice and preparation of seed.
4. Preparation of seed bed, seeding, harvesting.
5. Feeding and food value; cooking.

PLANT GROWTH—5 lessons.

1. Germination and stages of growth.
2. Root systems.
3. Stems and leaves.
4. Flowering and pollination.
5. Fruit and seed forming.

POTATOES—5 lessons.
1. Potato judging.
2. Care of crop.
3. Selection and preparation of seed and treatment of scab.
4. Preparation of seed bed, cultivation, spraying.
5. Ways of preparing as food.

POULTRY—11 lessons (See page 103).
1. Types and breeds of chickens.
2. Feeding and care for winter egg laying—poultry pests.
3. Egg records—marketing of eggs.
4. Eggs and food.
5. Feeding for market. Marketing, dressed and live.
6. Getting ready for poultry shows.
7. Ducks, geese and turkeys.
8. Preparing poultry as food.
9. The poultry house and runs.
10. Hatching, care of chicks.
11. Storing and preserving eggs.

SEEDS—4 lessons.
1. Examination of small seed for weed seed and adulterants.
2. Principles and methods of making germination tests of small grains and other seeds.
3. Class preparation of test boxes.
4. Reading the tests.

SHEEP—6 lessons (See page 123).
1. Wool and mutton types—breeds.
2. Wool production.
3. Manufacture of wool cloth. Some common kinds of woolen cloth.
4. Care and management.
5. Diseases.
6. Butchering and cutting, mutton as food.

SOCIAL LIFE—3 lessons.
1. Spelling school, literary society, church, clubs, contests, athletics.
2. Farmers' institutes, recreation, home reading table.

SOILS—5 lessons.
1. Composition.
2. Capillarity of soil and retentivity of moisture.
3. Effects of cultivation.
4. Manures. Barnyard and green manures.
5. Rotation of crops. Effect on fertility. Value of clover and alfalfa.

WEEDS—6 lessons.
1. Study six to ten or more common weeds that are troublesome on the farm.
2. Collection of specimens and seeds and their identification.
3. How weeds spread.
4. Method of extermination.
5. Effect of weeds on crop and soil.
6. How to prevent introduction of new weeds.

WHEAT—4 lessons (See page 105).
1. Study of wheat plant.
2. Culture.
3. Uses. Manufacture of flour.
4. Bread making.

Seeds and Crops.

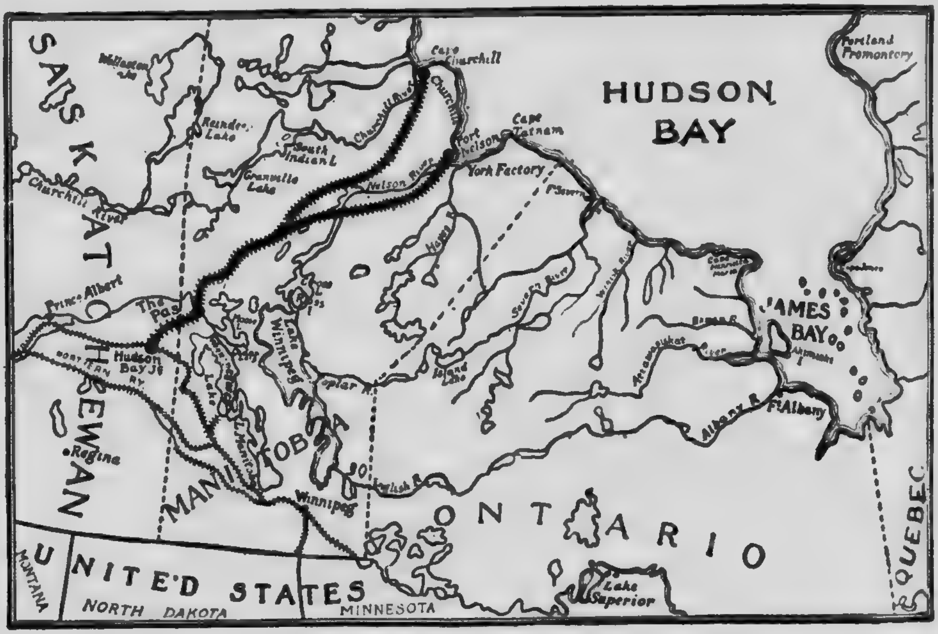
The testing of seed is as important as the cultivation of the ground and the harvesting of the crop. Without good seed it is impossible to realize a rich harvest.

WHEAT. Men are enchanted with the sowing of wheat seeds, with harvesting the golden fields of grain, with the hum of the great threshing machine, with the movement of the great cars and ships laden with the trillions of berries, with the burring of the mighty mills, with the mysteries of the bake oven, and with the never cloying pleasures of white bread covered with June-yellow butter.

If a grain of wheat could tell the story of its brothers, sisters, father, mother, uncles, aunts and its other relatives near and remote, it would equal any fairy tale.

One kind of berry would tell of its origin in England, another in France, another in Germany, and perchance another in Russia; each with its history back in some remote neighborhood, or, may be in still another country, with possibly a legend as to its unknown wild parentage.

Until in recent decades the history of the varieties of wheat, and of the other cereals is not of record. No doubt selection by man in more or less of a blundering way has gone on for many centuries. Hybridizing, by natural agencies, also may have occasionally occurred often enough to aid materially in making new varieties by blending the good qualities of two or more parent kinds.



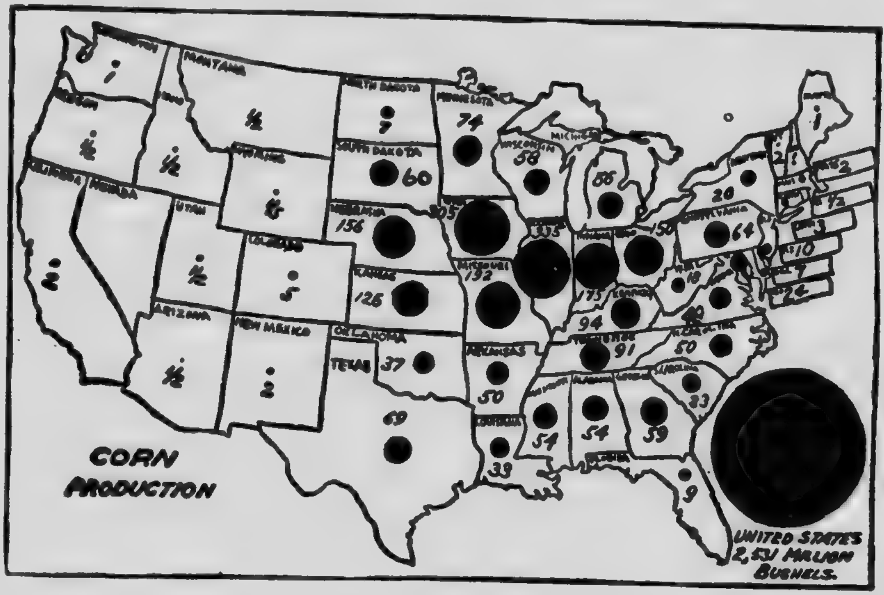
Map of the Hudson Bay region to show the routes which will carry wheat from the prairie Provinces to tidewater and Europe.

It is an ever-existing problem to select the most suitable kind of seed. Many varieties are grown in North America, but most of these are adapted only to certain soils and specific climatic influences. A study of local conditions and varieties will often result in finding the best seed wheat near home, as wheat usually suffers more or less deterioration from change of locality. The points to be kept in mind in selecting a new variety are as follows: A full grain of good weight, stiff straw with ability to stand up in adverse weather, tendency to ripen early (especially in the colder sections), compact head which is not liable to shatter, good bread quality and power to resist insect enemies.

Corn. The average yield of corn at present is about 25 bushels per acre in the United States and it is less in Canada. Experts believe it can be increased to 35 and ultimately to 50 bushels. Selection of the seed, manner and time of planting, fertilization of the soil and kind and extent of cultivation are factors which need consideration. Of these the selection of the seed is considered of first importance. This should be done as follows:

1. Every ear of corn intended for planting should be tested, that is, not less than six kernels (better ten) should be taken from each ear and sprouted, and all weak and bad ears discarded.

2. Every ear intended for planting should be harvested before the fall freezes, and properly preserved.



3. The corn should be graded and the planter tested and made ready to drop the proper number of kernels.

4. The corn should be improved by selecting, for the average farm, say 100 of the best ears and planting them on one side of the corn field. The seed for the following crop is to be selected in the fall from the part of the field where the best seed was planted.

Seed corn should be hung up, not piled up. It is circulation of air that is needed and not heat. Especially is this true during the first two weeks after the seed is harvested, while it is still sappy. There is no place better than an upstairs room or attic, where windows can be left open until the seed is dry.

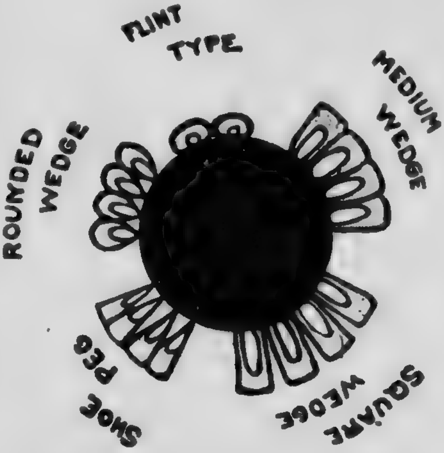
How to Select Good Ears of Corn.

1. A good ear should be cylindrical or nearly so. It should be full and strong in the middle portion, and the circumference should be approximately three quarters of the length. The rows of kernels should be straight, and not less than sixteen nor more than twenty-two in number. The ear should be from eight and one-half to ten inches long.

2. The color of the grain should be true to variety, even in shade, and free from mixture. White corn should have white cobs, and yellow corn, red cobs.

3. The tip should not be too tapering. It should be well covered with straight rows of regular kernels of uniform size and shape.

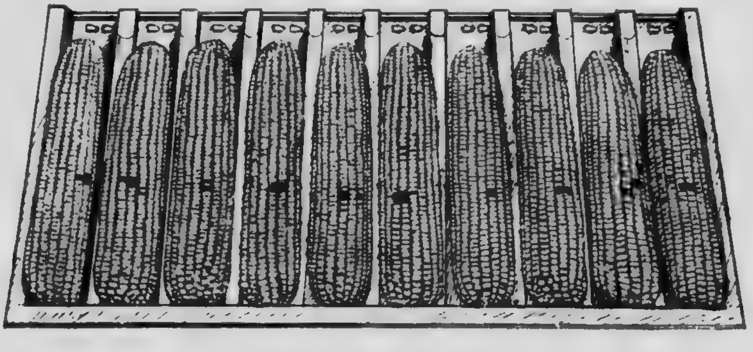
4. Open, swelled, expanded, flattened, and pinched butts are objectionable. The rows of kernels should extend in regular order over the end of the cob, leaving a depression when the shank is removed.



Select ears of corn for seed with full and strong kernels, such as the medium wedge shown ab They leave no waste space.

5. The shape of the kernel should conform to the variety standard. The ti of the kernels should be full and strong, leaving no space between them near th cob. Toward the crowns, the edges of the kernels should be so shaped as t leave merely enough space between the rows to facilitate drying. Shrunken o pointed tips and badly rounded crowns are objectionable. The crowns of th kernels should be rather deeply dented, but not pinched or chaffy. The dent should extend evenly across the kernel, and there should be no pointed or sharp margins. The kernels should be about five-sixteenths of an inch wide by fiv eighths of an inch long, and six to the inch in the row.

6. The ears should be well matured, firm, and sound. The germs should be uninjured, large, bright, fresh and vigorous looking.



Ten champion ears of dent corn which have been tested and won the prize. Notice the straight rows of kernels and the full ends.

Alfalfa. Alfalfa is regarded with greater favor from year to year as a forage crop. This plant is grown successfully in semi-arid as well as in well watered sections. This plant is very profitable in dry sections because it roots very deeply in the soil. It is safe to say that alfalfa roots penetrate as deep as there is any soil. If the soil is three feet deep, the roots will penetrate three feet. If the soil is ten feet deep, the roots will penetrate ten feet. If the soil is thirty feet deep, the roots will go down thirty feet. Thus, the whole soil is utilized.

The plant uses the whole of the growing season, and it is the only crop that the farmer grows that does this. It is very hardy and does not easily freeze out. As soon in spring as the sun has slightly warmed the earth, the alfalfa is up and growing. It does not become injured by light frosts, but keeps right on growing. Soon after the corn is planted, the alfalfa is ready to cut by the first of June in most of the region of the corn belt; earlier, in the South; and not much later anywhere. Thus the soil has yielded one crop almost before the corn has begun to take hold at all.

In thirty days from the time it is cut there stands a second crop ready for the mower. After that, in thirty-five or forty days, it will yield a third crop. In many sections, if the third crop is taken off in time, it will produce a fourth cutting. Much of the yield of these later cuttings depends of course upon the presence of moisture in the soil, but it is sure that the alfalfa will use all of the moisture from rainfall, and if irrigation is possible it will use a very large amount of irrigation water. Thus it uses to the best advantage all of the soil, all of the season from early spring till late fall, and all of the soil moisture. Of no other crop can this be said.

The forage of the alfalfa is the richest and most palatable that the farmer can grow. The alfalfa plant, cut at the right time and rightly cured, is very rich in protein. What is protein? It is what makes the red flesh and red blood of the animal. It is what makes nerve and brain and vital process. Alfalfa is rich in bone. It is the best feed for the baby on the farm, the baby colt, the baby calf, the baby lamb, pig and chick. It is good for the young animal because the young must have protein to build his little body. And as it is best for the baby so it is best for the baby's mother. It makes her give much milk and restores her tissues.

How to Start a Field of Alfalfa.

The methods of sowing alfalfa vary with the location and climate. In the arid localities it is a simple matter. The land is usually plowed in winter or early spring, worked down to a good seed bed, and the seed is sown alone in middle spring time. It is irrigated occasionally according to the nature of the soil, and crops are often taken from it the same year, though it is not at its best until the third year, but it will yield a very heavy crop the second year. In some countries it is a practice to sow a light seeding of oats with the alfalfa, in other regions this will not do since oats will lodge or bed down and smother the slender alfalfa plants. In general the better practice in the arid region is to sow the alfalfa alone.

The amount of seed to the acre varies between four and thirty pounds. The smaller amount of seed is sometimes sown when seed is desired from it, as it seeds better not to be thick. There are 14,118,000 seeds in a bushel of alfalfa seed. Therefore, to sow half a bushel to the acre would put 166 seeds to the square foot. To sow fifteen pounds would put 83 seeds. It is evident that it is more essential to have good seed and good distribution of the seed than to use a great amount of seed. About twelve to sixteen plants to the square foot are all that will ever stand, and on rich, deep soils they will not long endure even that much crowding.

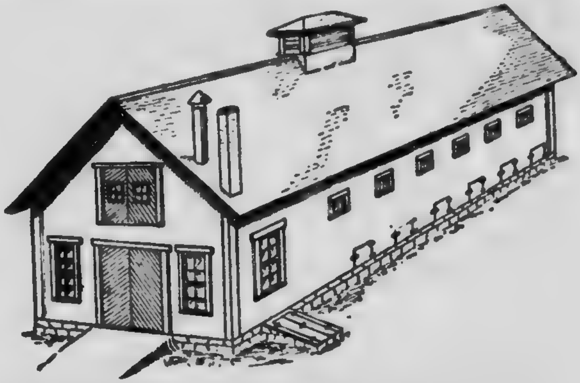
Weeds often come up to crowd the young alfalfa. To destroy these weeds, the field should be clipped with the mower, setting it to run as close to the ground as possible. There may come a yellowish rust that attacks the leaves. To destroy this, cut close with the mower. When preparing land for alfalfa, the field should be left as smooth as practicable, so that the mower may run over it in security. This trouble of the leaf rust will not be so much in evidence in western lands as in the lands east of the Mississippi river.

Care of Feed and Stock.

Practical farming is impossible without good buildings and adequate machinery. Live stock requires good housing for protection against storms and cold weather. This is true especially of young animals, milch cows and work horses, but all classes of animals will do better and require less feed if they are well protected and fed regularly.

Grouping Farm Buildings.

The building will of course depend much on the character of farming followed. It is not best to build large combined barns and stables to house all the animals of many classes, the tools and machines, the forage and grain, under one roof. Instead, it is better to have a stable for the horses, another apart from it for the dairy, if one is kept, though if only two or three cows are kept they can be sheltered in the horse stable or in a leanto at one side or end. As a rule, horses and cows should be separated. Horses are better off for abundant air and in cool or almost cold stabling. Cows giving milk also need abundant air, but will not endure cold well or as low temperatures as make horses thrive. To get best results make these stables apart. An open yard, if possible, paved with concrete made rough, should be provided for both cows and horses. Naturally, one cannot well have both classes of animals in the same yard.



Modern hog house. Notice that a team can be driven through it.

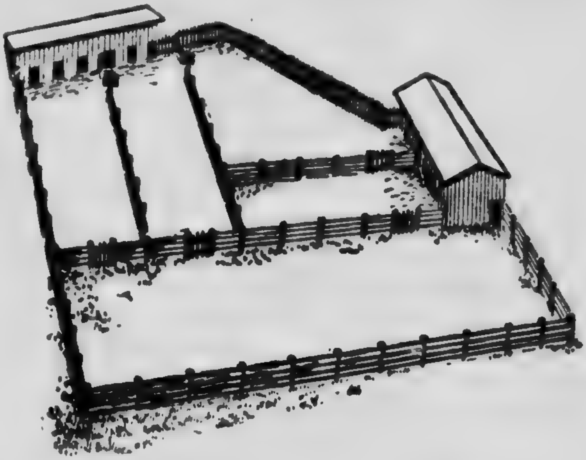
Sheep require a shed by themselves. Sheep are better to have a very great flood of fresh air. They do not mind the cold at all. The sheep should have their own quarters. They need a yard, also. Better have it on the north side of the barn. There will be less mud there; the ground will remain frozen in winter. There will be shade there in summer.

Pigs are best off in a place by themselves. A permanent pigging house is good to have. Concrete the small yards in front of each pen.

Poultry need separate quarters. It is not good to have fowls in the stable or on the hay. The carriage shed is a poor place for hens.

Every farm should have a tool shed. It should be located at a very convenient point, so that it is easy to drive through it and unhitch there from the wagon, drill, mower, or corn planter. A simple shed open at two sides, with posts 10 feet apart, the shed about 30 feet wide and as long as needed, is satisfactory. Have an upper story or half story with a bridge that can be let down. This makes a good place for tools that will not be needed regularly. The great advantage of such a shed is that one can drive right through it crossways and leave any machine or wagon in place.

It is not a simple thing to plan the grouping of farm buildings. Nor can one plan for any farm until he has seen it. A safe rule is to place buildings far enough apart so that all will not be destroyed in case of a fire.



A piggery—the abode for the mother and her young.

Building a Silo.

Every farmer should have a silo, especially if dairying is a part ot the enterprise, as it enables the farmer to preserve in a good condition a large quantity of fodder. The size of the silo should be in proportion to the quantity of feed needed per day. About three or four inches should be used from the top daily when feeding. This is important for the reason that the silage when exposed to the air becomes moldy and unfit for feeding, but if three or four inches are removed evenly from the top each day, the silage will not become damaged by the exposure.

Farmers who wish to use more than three or four inches daily need a second silo. A good size is to build twenty feet in diameter and fifty feet high. If the silo is more than twenty feet in width, it may not be possible to feed sufficient to prevent the top from molding. An elevation of more than fifty feet is too high for the ordinary farm and the silage presses against the sides too much in a higher structure.

It is most convenient for feeding to build the silo up against the barn in which the silage is to be fed. The importance of having a right structure makes it desirable to employ a contractor who has experience in silo building.

Filling the silo with a portable engine.

The foundation of a silo should be solid and well made, owing to the heavy weight which it must support. The necessary thickness of the walls depends upon the material used in constructing the portion which is above ground. A thicker foundation is required for a concrete silo than for one constructed of light staves. It is well to tile the ground, so as to have it well drained and place the foundation below the frost line.

It is necessary to have the inside walls smooth and perfectly perpendicular. This will allow the silage to settle evenly and exclude intervening air. The walls must be air-tight and water-tight. It is necessary to have the walls constructed of material which will not absorb the water from the silage, as otherwise the silage will become dry and begin to mold.

It is a good plan to have a man in the silo to spread the silage so it will be distributed evenly. Care should be taken to tramp the silage around the edge. This will exclude the air and cause the settling to be uniform. Water must be added as the silage is stored, the quantity of water depending upon the amount of moisture in the silage.

Corn is the most desirable crop for silage, but clover, alfalfa and cowpeas are stored to good advantage. A machine should be used to convey the silage to the upper part of the silo, using either a blower or an endless belt with buckets. The silage will keep in its natural state until it is used if handled properly and housed in a good silo.

Sanitation in the Country.

The farm should be the healthiest place in the land, but unfortunately it is not. It has no lack of sunshine and, outside of the home, there is no lack of pure air. Both exercise and wholesome food are abundant.

The chief source of death and inefficiency in the country is the insanitary condition of many farm homes. The farmer living in an insanitary home is especially liable to typhoid fever and consumption, the two scourges of the rural districts.

Typhoid fever is generally due to impure water; and the water is generally rendered impure by reason of an open privy, from which the impurity enters the well by surface wash, or by seepage underground. It may also be carried by flies from some place in the neighborhood where there is a case of typhoid fever. Both of these diseases are now well understood to be germ diseases. It is comparatively easy to avoid typhoid fever.

It is not so easy to avoid consumption, for the reason that there is more or less tuberculosis among the cattle on a considerable per cent of the farms. Where there is tuberculosis among the cattle, there is tuberculosis among the hogs and chickens. In fact, the entire country is so infected with tuberculosis germs that the main effort should lie in the direction of so increasing the vitality of the individual that the system can throw off the infection.

The reason why so many farmers' children, especially girls, are affected with tuberculosis is that there is lack both of sunlight and ventilation in the average farm home. This will be easily remedied when all appreciate the necessity for pure air and sunlight, as well as pure food and exercise. While no lack of ventilation will in itself produce tuberculosis, the lack of vitality due to an insufficient supply of fresh air, especially at night, renders the system unable to resist the germ when introduced.

In every home there should be proper drainage to the cellar, ,and this drainage should be put in before the foundation of the house is laid. The tile should be two feet under the cellar floor. The cellar should be cemented. It is useless to cement an undrained cellar, for the pressure of the water outside in a wet season will break the cement.

Provision should be made for ventilation, particularly of the sleeping rooms. A chimney in the center of the house, commencing in the cellar, with a brick or two left out at the bottom and also on each floor, and the opening covered with a perforated iron, will draw off the air which has been deprived of its oxygen by breathing. Air can be introduced by lowering the top sash of the window, or by using muslin instead of a sash, thus admitting pure air without a draft.

Where there are modern improvements—and sooner or later these will be in all country homes -including bathroom and sanitary closet, the waste substances can be washed into a septic tank, from which the water flows chemically pure.

Questions on Agriculture.

State some objects to be obtained in the study of agriculture.

When and where was established the first college devoted to agriculture? 38.

Locate some agricultural schools in Canada. 38.

What are agricultural stations? How are they distributed over the world? 39.

Name some organizations helpful to rural life. What benefits should be derived from farmers' institutes? 977.

Suggest some means of fostering and elevating the social side of rural life.

What is the average yield of corn per acre in the United States? State some means of increasing the yield.

Give ten points on the selection of seed corn and on the conditions of soil for planting.

Describe the preparation of a hot bed and name some plants for which it is used.

Name some common diseases among plants; among animals. Suggest remedies for the same.

Give a list of pests common to corn and grain and tell how to destroy them. 1393.

How is alfalfa grown? What is its relative food value for stock? To what soils and climate is it peculiarly adapted? 64.

Of what use are silos? How are they constructed?

Tell how various farm buildings should be grouped. Where is the best location for sheep yards, and why?

What are the advantages of having separate buildings for horses and cattle?

Describe a sanitary dairy. Why is it so important to have frequent tests of cattle and milk? 1787.

State some common menaces to health in country homes. How may these be relieved and avoided?

How to Live on the Farm

Virginia C. Meredith, Cambridge City, Indiana.

It might be a foretaste of paradise if the money earned on the farms was spent for the betterment of the farm and the farm family. Think you it is a debatable question whether a farmer has a right to buy the adjoining "eighty" until he has installed a furnace and running water in his home? Whether a farmer has a right to buy bank stock before his farm live stock is up to par? Whether a farmer has a right to buy government bonds when his children could use profitably more education? Money may be wisely spent in promoting the social life of young people. Hospitality costs money but it implies an expenditure of time and thought that may make for leadership in right lines. Travel costs money but it brings a return in enriched lives. Books, papers and music cost money but they bring satisfaction not to be parted with when once secured.

An essential factor not to be overlooked and that should not be underestimated is the woman's club; it is easily adapted to the community but it cannot live unless there are a few earnest women to nurse it along through the first trying years—and after that the community will not want to live without it, and soon it embraces the interests of the children and the men, and performs the inestimable service of furnishing good topics for talk in the home.

The welfare of the country is based on the farm family; when the family cherishes ideals and convictions that center in the farm home then all is well—because then material and social conditions are on the up grade, then how to live on the farm is understood.

The queen bee is a queen not because of heredity but because of environment—a bigger cell, better food, more care!

Orthography and Orthoepy

Outline.

I. Definitions—Orthography; Orthoepy; Elementary Sound; Letter; Syllable; Word.
II. Elementary Sounds—Number, classes.
  1. a. Vowels; b. Consonants.
  2. Vowels—Definition; Number (a, e, i, o, u, sometimes w and y).
III. Consonants—Number (21).
IV. Diphthongs, digraphs, trigraphs, double consonants.
V. Substitutes, accent.
VI. Diacritical marks.
VII. Spelling. a. By letter; b. Phonetically.
VIII. Sounds of vowels and consonants.
IX. Articulation and pronunciation.
X. Formation of plurals; possessives.
XI. Use of capital letters.
XII. Rules for spelling.

DEFINITION. Orthography is that division of grammar which treats of spelling and pronunciation. It embraces ORTHOEPY, which treats of articulate sounds and their correct use in pronunciation.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA is foremost as a work of general reference in that all but the simple titles are divided into syllables and are marked diacritically. In this wholesome feature it has been the pioneer among cyclopaedias. With a set of this work the student is enabled to study the general topics of knowledge and to become a master in the arts of writing and conversation.

TEACHING ORTHOGRAPHY. In English schools orthography is taught as a branch apart from grammar. The varied and numerous anomalies of our language make this an absolute necessity. Correct pronunciation cannot be secured, in many cases, from the printed form. While, on the other hand, the pronunciation gives the learner no clue to proper spelling.

It may require some effort to lead pupils to understand that d-a-y is pronounced "da" and q-u-a-y "ke," while c-h-o-i-r and q-u-i-r-e are pronounced the same. There are hundreds of words used in our school text-books and in common language that show equal disregard for fixed rules of spelling or pronunciation.

FORMATION OF PLURALS. In the formation of plurals the pupil is often bewildered. Many English words have no distinction in singular or plural forms, while others are formed irregularly. It is difficult for a beginner to understand that the plural of ox is *oxen*; and that the plural of box is *boxes*, not *boxen;* that the plural of house is *houses* and that the plural of mouse is *mice*, not *mouses.* Some words have two plural forms, among the number *brother, die,* and *penny* may be named. Many other examples could be added, if it were necessary, to show that correct spelling and pronunciation are difficult to secure and that, for this reason, orthography is one of the most important branches to be mastered in the grammar schools. The combined experience of educators has led to the belief that very careful and thorough work should be done in this line.

THE PRINTING PRESS. The printing press has done much toward giving the English-speaking people better orthography and more distinct pronunciation than all other causes combined. The people of the present age read more extensively and exhaustively; they carry on a wider range of correspondence and business intercourse than the people of any previous time. All this has done much toward improving the orthographical construction of language.

In general, this is an object lesson. It proves that the nature and extent of the results secured depend very much upon the efforts put forth in securing them. It shows also that pupils may be benefited through channels of practice in oral and written drills, in dictation work, in letter and composition writing, and in every way that their language and orthography may be improved and their vocabulary increased.

DRILLS IN PRONUNCIATION. Usually pupils spell better than they pronounce. This may be attributed to a lack of sufficient work on the elementary sounds and diacritical markings in a majority of schools. For this reason it may be in order to suggest that the teacher place the orthography on the program as of equal importance with language. The pronunciation of words should be constantly guarded by the teacher in class recitation, together with the spelling in both the recitations and in manuscript work. Drills in pronunciation should be given until the student can use each word with facility.

WHAT WORDS MEAN. Teaching the meaning of words is another desirable feature. There are few who, after giving the matter some reflection, will hold that it is of any value for pupils to spell long lists of words in rote without comprehending their meaning or signification, yet it is practiced in a great many of our schools. Would it not be better to lead the pupil to study each new word in the lesson and thus enable him to use it with precision? It is true that his vocabulary is increased only by such words as he can spell, pronounce, and use accurately. This is a matter that every student should understand.

ASSIGNING LESSONS. Lessons should be assigned with care, the teacher pointing out the objects to be attained by study. New words may be pronounced, thus helping the pupils in the preparation. In the next recitation it should be ascertained whether the directions given at the previous recitation have been observed and the objects pointed out have been secured. The recitations should be made instructive, thus encouraging the student to put forth his best effort.

ORAL AND WRITTEN SPELLING. The two methods of teaching spelling are the *oral* and *written*, in which a spelling book and the dictionary are used regularly. The teacher should pronounce the words but once, and have pupils pronounce before spelling orally. Usually it is best to require both oral and written work. The advantages in oral spelling are that pupils learn to pronounce words correctly and that it enables the class to drill on a large number of words in a short time. For this reason it is well adapted for review work both in pronunciation and spelling.

In written spelling the pupil secures a better knowledge of the form of the word, and the division of words into syllables. It requires every pupil to spell all the words pronounced and to obtain a proper idea of the use of capital letters, the hyphen, and other marks. In marking the work, the teacher should take into account all these points as well as to note the penmanship and accuracy with which the work is executed.

DAILY DRILLS. It is advisable to give daily drills on the sounds and markings of words, to spell by letter and by sound as well as writing the word. Geographical names and terms in arithmetic, grammar, and other branches, should be spelled as they are used in the class for the first time. New words, or those difficult to spell, should be used in sentences by the pupils. Synonyms, with which our language abounds, should receive early and marked attention. Homonyms of words should be given as opportunity presents. Orthographic parsing, that is, separating words into their elements and giving their classification and modification, is very desirable and profitable.

DIACRITICAL MARKING.

The English alphabet contains fewer letters than the spoken sounds that are in use, hence some of the letters are modified to represent these sounds. In orthography these modifications are indicated by certain marks, known as *diacritical marks*. They are shown in the following table, affixed to certain letters, and the name is stated to the right:

ă	Breve (short).	a̯	Inverted breve (=*o*).
ā	Macron (long).	ā̇	Suspended bar (long obscure).
â	Circumflex (circumflex).	ẽ	Tilde.
ȧ	Dot above (short Italian).	¢	Hard c (=*k*).
ạ	Dot below (short obscure).	ç	Cedilla (=*s*).
ä	Dots above (Italian).	æ	Diphthong (as *e* alone).
a̤	Dots below (broad).	o͞o	Large breve (long).

Guide to Pronunciation.

VOWELS.

ă (short), as in *hat, cat.*
ā (long), as in *ale, hate.*
ä (Italian), as in *car, mar.*
ȧ (short Italian), as in *fast, class.*
a̤ (broad), as in *all, fall.*
â (circumflex), as in *care, snare.*
ạ (short obscure), as in *final, spinal.*
ā̇ (long obscure), as in *surface.*
a̯ = ŏ, as in *was, what.*
æ = ē, as in *Caesar* (sounded as though they were *e* alone).

ĕ (short), as in *net, met.*
ē (long), as in *me, eve.*
ê (circumflex = â), as in *there.*
ẽ (tilde), as in *her.*
ẹ (short obscure), as in *patent.*
ē̇ (long obscure), as in *delay.*
e = ĭ, as in *pretty.*

ĭ (short), as in *hit, bit.*
ī (long), as in *kite, mite.*
ĩ (tilde), as in *sir.*
ī̇ (long obscure), as in *idea.*

ŏ (short), as in *pop, hop.*
ō (long), as in *cone, bone.*
ô (circumflex = a), as in *for.*
ō̇ (long obscure), as in *hero.*
o͝o (short), as in *book, brook.*
o͞o (long), as in *moon, spoon.*
o̯ = û, as in *word.*
o̤ = o͞o, as in *who.*
ọ = o͝o, as in *wolf.*
ȯ = ŭ, as in *son.*

ŭ (short), as in *rut, cut.*
ū (long), as in *muse, fuse.*
û (circumflex), as in *turn, urn.*
ū̇ (long obscure), as in *unite.*

w is a vowel only after a vowel, when it forms the second element of certain diphthongs, as in *few, how.*

y̆ (short) = ĭ, as in *hymn.*
ȳ (long) = ī as in *by, cry.*

CONSONANTS.

c (hard) = k, as in *cat, cape.*
ç (cedilla) = s, as in *cell, façade.*
g (hard), as in *dog, gave.*
ġ (soft), as in *gem, gentle.*
k for the German ch, as in *ich, Bach* (bäk).
ü for the German ü, as in *Blücher, Grünberg.*
ö for the German ö, as in *Göttingen, Görgey.*
n for the French n, as in *bon, Brêton* (brâ-tôn′).

Rules for Spelling.

RULE I.—FINAL *e* FOLLOWED BY A VOWEL.

Final *e* of a primitive word is dropped on taking a suffix beginning with a vowel. Examples: blame+able=blamable; guide+ance=guidance; come+ing=coming; force+ible=forcible; obscure+ity=obscurity.

Exception 1.—Words ending in *ge* or *ce* usually retain the *e* before a suffix beginning with *a* or *o*, for the reason that *c* and *g* would have the hard sound if the *e* were dropped. Examples: peace+able=peaceable; change+able=changeable; courage+ous=courageous.

Exception 2.—Words ending in *oe* final retain the *e* to preserve the sound of the root; as shoe+ing=shoeing; hoe+ing=hoeing. The *e* is retained in a few words to prevent their being confounded with similar words, as singe+ing=*singeing*, to prevent its being confounded with *singing.*

RULE II.—FINAL *e* FOLLOWED BY A CONSONANT.

Final *e* of a primitive word is retained on taking a suffix beginning with a consonant. Example: pale+ness=paleness; large+ly=largely.

Exception 1.—When the final *e* is preceded by a vowel, it is *sometimes* omitted. Example: due+ly=duly; true+ly=truly; whole+ly=wholly.

Exception 2.—A few words ending in *e* drop the *e* before a suffix beginning with a consonant. Example: judge+ment=judgment; lodge+ment=lodgment; abridge+ment=abridgment.

RULE III.—FINAL *y* PRECEDED BY A CONSONANT.

Final *y* of a primitive word, when preceded by a consonant, is generally changed into *i* on the addition of a suffix.

Exception 1.—Before *ing* or *ish*, the final *y* is *retained* to prevent the doubling of the *i*. Example: pity+ing=pitying.

Exception 2.—Words ending in *ie* and dropping the *e* by Rule I. change the *i* into *y* to prevent the doubling of the *i*. Examples: die+ing=dying; lie+ing=lying.

Exception 3.—Final *y* is sometimes changed into *e*; as duty+ous=duteous beauty+ous=beauteous.

RULE IV.—FINAL *y* PRECEDED BY A VOWEL.

Final *y* of a primitive word, when preceded by a vowel, should not be changed into an *i* before a suffix. Example: joy+less=joyless.

RULE V.—DOUBLING.

Words of one syllable (monosyllables), and words accented on the last syllable, when they end with a single consonant, preceded by a single vowel, or by a vowel after *qu*, double their final letter before an additional syllable that begins with a vowel. Example: rob+ed=robbed; fop+ish=foppish; squat+er=squatter; prefer+ing=preferring.

Exceptions.—*X* final, being equivalent to *ks*, is never doubled; and when the derivative does not retain the accent of the root, the final consonant is not always double; as prefer+ence=preference.

RULE VI.—NO DOUBLING.

A final consonant, when it is not preceded by a single vowel, or when the accent is not on the last syllable, should remain single before an additional syllable; as, toil+ing=toiling; cheat+ed=cheated; murmur+ing=murmuring.

Geographical Prefixes and Suffixes.

Key to Abbreviations.

Arab.=Arabic.
A. S.=Anglo-Saxon.
Celt.=Celtic.
D.=Dutch.
Eng.=English.
Fr.=French.
Ger.=German.
Gr.=Greek.
Heb.=Hebrew.
Ind.=Indian.
Ir.=Irish.
It.=Italian.
Lat.=Latin.
Per.=Persian.
Port.=Portuguese.
Span.=Spanish.

AB, *or* AUB [Per.], water; a river.
Doab, two rivers; *Punjaub*, five rivers.

ABING, *or* ABBOT [A. S.], an abbot.

ABBE [Fr.], an abbot. *Abingdon; Abbotsbury; Abbeville.*

ACQUA [It.], AGOA [Port.], AGUA [Span.], AIGUE, AIX, EAUX [Fr.], water.
Acquapendente, hanging water; *Agoa Fria*, cold water; *Agua Dulce*, sweet water; *Aix-la-Chapelle*, waters of the chapel; *Bordeaux*, border of the waters.

ALBUS [Lat.], white. *Alps; Alpine; Albion.*

ALTUS [Lat.], high; [Span.], alta.
Altamura, high wall; *Alta California*, Upper California.

ANTI [Gr.], opposite. *Antarctic; Antitaurus.*

ASH [A. S.], ash. *Ashfield; Ashton* (town); *Ashland.*

AVEN, *or* AVON [Celt.], water.
Avondale; Strathaven, valley of the Avon.

BAB [Arab.], a gate; a court.
Babylon, court of Belus; *Bab-el-Mandeb*, gate of tears.

BAD, *or* BADEN [Ger.], bath or baths.
Badenhausen, bath houses; *Carlsbad*, Charles's bath.

BAB, BALL, BALLY [Celt.], a township; a village.
Ballyclare, town on the plain.

BAR [Sanskrit], country. *Malabar*, country of mountains.

BATON [Fr.], stick. *Baton Rouge*, red stick.

BAYOU [Fr.], stream. *Bayou Pierre*, Peter's Creek.

BEAU, BEL, BELLE [Fr.], beautiful.
Belmont (mountain); *Belleisle; Puerto Bello*, fine harbor.

BEN [A. S.], a bean. *Bennington* (town); *Binfield.*

BEN, *or* PEN [Celt.], a hill or mountain.
Ben Lomond, beacon mountain; *Ben Nevis*, cloud-capped mountain.

Berg [Ger.], a hill. *Adelsberg*, noble hill; *Schwartzenberg*, black mountain.

Beth [Heb.], a house.

Bethel, house of God; *Bethlehem*, house of bread.

Bon, bonne [Fr.], and bueno *or* buena [Span.], good; fine.

Terrebonne, good land; *Buena Vista*, fine view; *Buenos Ayres*, good air.

Bridge [Eng.], *or* bruck [Ger.], a bridge.

Cambridge, over the Cam; *Innsbruck*, over the Inn.

Brook, a brook. *Westbrook; Brookfield; Overbrook.*

Burg [A. S. and Ger.], borg [Dan.], and bourg [Fr.], town or borough.

Augsburg, town of Augustus; *Cherbourg*, Caesar's town; *Edinburgh*, Edwin's town; *Canterbury*, city of Kent; *Newburg; Oldenburg; Harrisburg.*

Burn, born, bourne, bone [A. S.], brunn [Ger.], a brook.

Burnham, brook-home; *Sherborn*, clear brook; *Heilbronn*, fountain of health; *Schönbrunn*, beautiful fountain.

By [A. S.], a village or town.

Kirkby, church town; *Rugby*, rock town; *Ashby*.

Caster, cester, chester [A. S.], a camp or fortress.

Lancaster, fortress on the Lune; *Dorchester*, camp by the river; *Gloucester*, fair city or camp.

Costa [Span.], coast. *Costa Rica*, rich coast.

Castle [Eng.], château [Fr.], cassel [Ger.], a castle.

Newcastle; Castleton (town); *Neufchâtel*, new castle.

Dale, del [Eng.], thal [Ger.], daal [D.], vale or valley.

Dovedale; Bloemendaal, vale of flowers.

Dam, damm [D.], a dike or dam.

Amsterdam, on the dam of the Amstel; *Rotterdam*, on the dam of the Rotter.

Dover [A. S.] a ferry. *Andover; Hardover.*

Dun, *or* don [Celt.], a hill, or a fort on a hill.

Dundee, fort on the Tay; *Snowdon*, snow-hill.

East, est, es [A. S.], ost [Ger.], east.

Eastham, east home; *Easton*, east town; *Essex*, East Saxony; *Österreich*, or *Austria*, east kingdom.

Eisen [Ger.], iron.

Eisenstadt, iron town; *Eisenberg*, iron mountain.

Ey, ea [A. S.], an island.

Anglesey, island of the Angles; *Jersey*, Caesar's Island; *Romney*, marsh island.

Fair [Eng.], beautiful.

Fairhaven; Fairmount; Fairfield; Fair Oaks.

Field [Eng.], feld [A. S.], a field.

Marshfield; Winfield, field of victory; *Litchfield*, field of dead bodies.

Folk [Eng.], people. *Norfolk* (north); *Suffolk* (south).

Ford [A. S.], furt *or* furth [Ger.], a ford.

Bradford (broad); *Hartford* (hart); *Frankford* (free).

Frank [Ger.], free; noble. *France; Frankfort.*

Ham [A. S.], heim [Ger.], home.

Nottingham, home with caves; *Durham*, home for deer; *Waltham*, home in the wood.

High [Eng.], **hoch, hohen** [Ger.], high.

Highgate; Hohenlinden, high lindens.

Hurst [A. S.], wood; forest.

Lyndhurst, forest on the Lynn; *Brockhurst,* forest on the brook.

Kill [D.], creek. *Bushkill; Fishkill; Schuylkill* (hidden).

Ley, *or* **ly** [A. S.], field; meadow; pasture.

Paisley, moist pasture; *Beverly,* field of the beaver.

Mill [Eng.], **mühl** [Ger.], mill.

Millbrook; Mühlhausen, mill village.

Mount [Eng.], **mont** [Fr.], **mont** [Span.], **monte** [It.], mountain.

Fairmount; Mont Blanc, white mountain; *Montserrat,* jagged mountain.

Negro [It. and Span.], black.

Montenegro, black mountain; *Negropont,* black bridge; *Rio Negro,* black river.

North [Eng.], **nord** [Fr. and Ger.], north.

Northumberland, north of the Humber; *Norwich,* north village; *Norway,* north way; *Rio del Norte,* river of the north.

Polis [Gr.], a city.

Sevastopol, city of Augustus; *Tripoli,* three cities; *Indianapolis; Annapolis.*

Port [Eng.], **puerto** [Span.], haven.

Bridgeport; Portland; Puerto Rico, rich haven or port.

Rio [Span. and Port.], a river.

Rio Grande; Rio Negro; Rio de la Plata, river of silver.

Schwartz [Ger.], black.

Schwartzenberg, black hill; *Schwartzenwald,* black forest.

Sierra [Span.], **serra** [Port. and Lat.], a saw or mountain.

Sierra Blanca, white mountain; *Sierra Morena,* red mountain; *Sierra Nevada,* snow mountain; *Sierra Madre,* mother mountain; *Sierra Leone,* lion mountain.

Stadt [Ger.], town. *Carlstadt,* Charles's town.

Stan [Per.] country.

Hindoostan, country of Hindoos; *Kordistan,* country of Koords; *Turkestan,* country of Turks; *Afghanistan.*

Stock, stoke, stol, stow [A. S.], place or seat.

Woodstock; Stockbridge; Bradstow, broad place.

Strat [A. S.], **strasse** [Ger.], street.

Stratford, ford by the street; *Stratton,* street town; *Strassburg,* town on the highway.

Thorpe, throp, trop [A. S.], a village.

Althorp, old village; *Winthrop,* village of the furze.

Town [Eng.], **ton, tun** [A. S.], a town.

Charlestown; Charleston; Brighton, Brighthelm's town; *Sutton,* south town; *Boston,* St. Botolph's town.

Wich, wick [A. S.], a town; a bay.

Greenwich; Norwich; Sandwich; Dantzic, village of the Danes.

Worth [A. S.], mansion, manor, or town.

Bosworth, St. Botolph's town; *Kenilworth,* mansion on the canal.

Anthropology

Know then thyself, presume not God to scan;
The proper study of mankind is man.
—*Pope.*

All that tread
The globe are but a handful to the tribes
That slumber in its bosom.
—*Bryant.*

ANTHROPOLOGY is the science of man and mankind. In the broadest signification it includes the entire field of sciences which relate to human life, especially government, history, language, literature, philosophy, physiology, psychology, and religion.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA presents a greatly diversified fund of knowledge on this subject. It affords the opportunity to study man not only as a zoölogical genus, but furnishes the means to investigate the sources of human development. Beginning with primitive life, it traces the growth upward in the expanse of mind and the evolution of culture.

The outlines in this subject cover the more important field. They may be considered in connection with other titles that are outlined under related topics, such as AGRICULTURE, BIOGRAPHY, LITERATURE, NATURE STUDY, etc. The student is likewise referred to the articles on the following

Correlated Subjects:

- Aesthetics.
- Age.
- Agriculture.
- Archeology.
- Barrow.
- Boomerang.
- Burial.
- Cannibal.
- Caste.
- Caucasian.
- Cave Dwellers.
- Clan.
- Cliff Dwellers.
- Cremation.
- Cuneiform.
- Darwinism.
- Demon.
- Dress.
- Education.
- Ethics.
- Ethnology.
- Evolution.
- Fable.
- Facial Angle.
- Fetich.
- Folklore.
- Ghost.
- Giants.
- God.
- Hair Dressing.
- Hieroglyphics.
- History.
- Indians.
- Labor.
- Lake Dwellings.
- Language.
- Law.
- Legend.
- Magic.
- Malays.
- Man.
- Marriage.
- Mermaid.
- Mongolian.
- Mound Builders.
- Mythology.
- Nature Worship.
- Negro.
- Polygamy.
- Religion.
- Sacrifice.
- Skull.
- Slavery.
- Stonehenge.
- Superstition.
- Suttee.
- Tomahawk.
- Totemism.
- Wigwam.
- Witchcraft.

Questions on Anthropology.

Define anthropology and name some sciences that are closely related to it. 111.

With what stage of life should the study of this subject begin?

How does Darwin account for the origin of man?

State some other theories regarding man's origin.

In what respect is man superior to other animals?

What does the science of biology include?

Under biology, how is living matter treated?

Through whom did the word *sociology* come into use? With what is it closely connected? 2669.

Name some of the early writers on sociology, ethnology, and evolution.

Why is the mythology of the Greeks, Romans, and Egyptians considered of great interest?

Compare the primitive means of communication with those of to-day.

What can you say of the homes, food, apparel, etc., of the early peoples?

Who is considered as the greatest promoter of education among the Negroes of North America?

To what race do the people of Northern Canada belong? Why are they called Eskimos?

Which race is least in population? Which is most numerous?

How extensive is the distribution of the white race?

State some of the early advances of civilization among the Chinese.

Man in Literature.

Men are but children of a larger growth;
Our appetites are apt to change as theirs,
And full as craving too, and full as vain.

—Dryden.

In the sweat of thy face thou shalt eat bread,
Till thou return unto the ground; for thou
Out of the ground wast taken: know thy birth,
For dust thou art, and shalt to dust return.

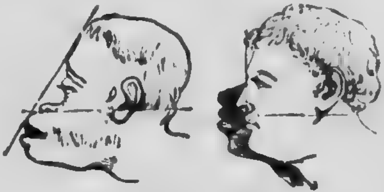
—Milton.

My heart is awed within me, when I think
Of the great miracle that goes on
In silence round me—the perpetual work
Of Thy creation, finished, yet renewed
Forever. Written on Thy works I read
The lesson of Thy own eternity.
Lo! all grow old and die—but, see again!
How on the faltering footsteps of decay
Youth presses—ever gay and beautiful youth
In all its beautiful forms. These lofty trees
Wave not less proudly that their ancestors
Moulder beneath them. Oh, there is not lost
One of earth's charms: upon her bosom yet,
After the flight of untold centuries,
The freshness of her far beginning lies,
And yet shall lie.

—Bryant.

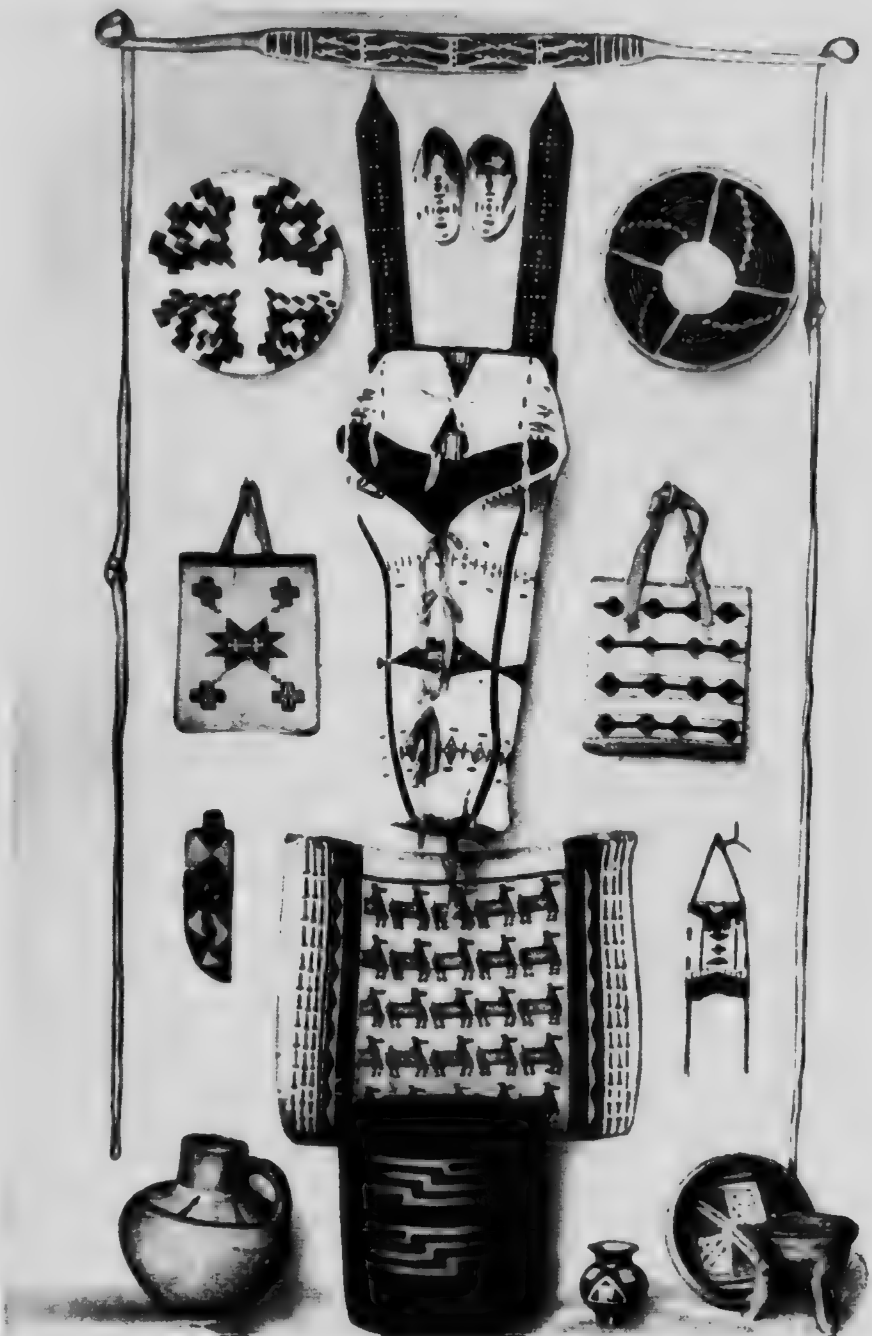
Races of Man.

- I. **Primary.**
  - 1. Caucasian, or White Race.
    - A. Location—Europe, Southwestern Asia, America, and colonies.
    - B. Description.
      - a. Round, oval head.
      - b. Fair complexion.
      - c. Arched forehead.
      - d. Symmetrical features.
      - e. Vertical teeth.
      - f. Smooth hair.
      - g. Ample beard.
    - C. Divisions.
      - a. Hamitic—Originally inhabited Palestine, Arabian Peninsula, and Nile valley.
      - b. Semitic, or Syro-Arabian.
        - Modern—Syrians, Jews, Arabians, Abyssinians.
        - Ancient—Assyrians, Babylonians, Moabites, Edomites, Phoenicians, Ammonites, Ishmaelites.
      - c. Indo-European, or Aryan—Japhetic (Most civilized).
        - 1. Germanic—Germans, Dutch, English, Flemings, Danes, Swedes, Norwegians.
        - 2. Celts—Welsh, Irish, Scots, Bretons of France.
        - 3. Ancient Greeks.
        - 4. Romanic—French, Italians, Spaniards, Portuguese.
        - 5. Slavonic—Russians, Croats, Poles, Czechs.
        - 6. Iranians—Afghans, Persians, Baluchis.
        - 7. Hindus.
  - 2. Mongolian, or Yellow Race.
    - A. Constitute one-third of the earth's population.
    - B. Location—Most of Asia, parts of Europe not occupied by white and Northern America.
    - C. Distribution.
      - a. Central Asia—Tibetans, Chinese, Indo-Chinese, etc.
      - b. Northern Asia—Samoyedes, Ugrian or Finnic, Tungusians Yakuts.
        - Others—Coreans, Japanese, Kamchatdales, Mongols, etc.
      - c. Europe—Turks, Magyars, Lapps, Finns.
      - d. America—Eskimos.
    - D. Description.
      - a. Angular face.
      - b. Broad head.
      - c. Oblique eyes.
      - d. Straight, coarse, black hair.
      - e. High cheek bones.
      - f. Pale lemon to brownish-yellow skin.
      - g. Scanty beard.
      - h. Medium stature.



FACIAL ANGLES.

- 3. Negro, or Black Race.
  - A. Location—Africa, portions of warm zones.
  - B. Description.
    - a. Narrow and elongated head.
    - b. Projecting jaws.
    - c. Thick lips.
    - d. Crisp, curly hair.
    - e. Black, dusky skin.
    - f. Scanty beard on upper lip.
    - g. Long arm.
    - h. Broad feet.



(Method Book, Opp. 148)

ART OF THE AMERICAN INDIANS.

This illustrates specimens of art work made by the American Indians, including a belt woven with porcupine quills, baskets, pottery, bags made of hemp, a knife sheath, [illegible] cases, beaded bag, [illegible], etc.

- **C. Species.**
  - a. Western Africa—Jaloffs, Mandingos, Ashantees.
  - b. Eastern—Gallas.
  - c. North Central—Tibboos.
  - d. South Central—Congos.
  - e. Southern—Hottentots and Kafirs.
- **D.** Civilization.
  - a. Gallas—Cruel, handsome, and gifted.
  - b. Hottentots—Most debased.
  - c. Many becoming profound and enlightened scholars when subjected to the advantages of civilization and education.
  - d. Population in United States, 10,500,000.

II. SECONDARY.

- 1. Malay, or Brown Race.
  - A. Location—Island of Madagascar, Malay Peninsula, Malay Archipelago, the islands of the Indian and Pacific oceans.
  - B. Description.
    - a. Resembles the Mongolians.
    - b. Horizontal eyes.
    - c. Coarse, straight hair.
    - d. Dark olive skin.
  - C. Characteristics.
    - a. Simplicity of language and expression.
    - b. Excellent traders.
    - c. Semicivilized.
  - D. Contrasts.
    - a. Papuans—Dark brown, even black.
    - b. Malay—Normal.
- 2. Australian.
  - A. Subspecies of Papuan branch of the Malays.
  - B. Description.
    - a. Deep-set eyes.
    - b. Large head.
    - c. Abundant beard.
    - d. Dark hair.
    - e. Dark brown skin.
    - f. Almost destitute of civilization.
  - C. Inhabits all of Australia not inhabited by whites.
- 3. American, or Copper-Colored Race.
  - A. Resemble Mongolians (Top of head more rounded, sides less angular).
  - B. Location—America.
    - a. Andean people—Advanced in civilization and understood metallurgy.
    - b. Central America class—Of still higher and more ancient civilization.
  - C. Once numerous and powerful.
  - D. Rapidly disappearing.
  - E. Mixed with Spanish and whites.

III. NUMERICAL STRENGTH.

- 1. Mongolian, 650,000,000.
- 2. Caucasian, 575,000,000.
- 3. Negro, 175,000,000.
- 4. Malay, 40,000,000.
- 5. American, 20,000,000.
- 6. Australian and mixed races, 40,000,000.

Questions on the Races of Man.

Into how many classes does the most recent classification divide the human race?

Upon what are these classifications based? Who may be mentioned as good authority on this branch of knowledge?

To what three main divisions does the white race belong? 512.

Compare the white race intellectually and morally with the other races.

Which race is the greatest in number? The least?

Name some nationalities of the yellow race.

Describe a Negro. To what continent is the Negro native?

What standing do the Hottentots have among other classes of the world?

How did the black race become scattered?

Where are the Malays located? For what are they noted? 1684.

What is said of the possible improvement of the Australian race?

Name some of the chief factors necessary to civilizing a nation.

Account for the speedy colonization and civilization of America.

Who are the Jews, Japs, Filipinos, Finns, Papuans, Creoles, and Gallas?

Which nation contains the largest per cent. of the world's population?

Dwellers in Cliffs and Caves.

I. In Caves.
  1. Early habitations—Belgium, France, Great Britain.
  2. Later peoples—Southwestern part of the United States and Mexico.
  3. Dwellings.
    A. Location—In natural caves.
      Under shelter of rocks.
      Near streams of water.
      Wide entrance, high roof, light and airy.
  4. Animals—Cave bear, saber-toothed tiger, hyena, etc.
  5. Weapons and utensils—Made of wood, bone, horn, and stone.
  6. Raiment—Animal skins sewed together.
  7. Decorations—Crude paintings and carvings.
  8. Ornaments—Made of ivory and teeth of animals.

II. In Cliffs.
  1. Where located.
    A. California.
    B. Arizona.
    C. New Mexico.
    D. Mexico.
  2. Homes.
    A. Made in natural cliffs along Rio Grande and Colorado rivers.
    B. Built of adobe blocks, plastered inside, and clayed on exterior.
    C. Rather square windows and doors.
    D. Inclosures made by stone slabs, skins, or blankets.
    E. Single dwelling—For one family in small recess.
    F. Communal—Serving many families in larger quarters.
    G. Reached by ladders and rocky stairways.
    H. Collection of material—By women and children.
  3. Traces.
    A. Ruins of dwellings.
    B. Exhumed bodies.
    C. Articles of manufacture—Pottery, carvings, missils, etc.
  4. Occupations.
    A. Agriculture.
      a. Raising of domestic animals.
      b. Products—Maize, cotton, tobacco.
    B. Manufacture.
  5. Government—Tribal.
  6. Extinction—By Apache Indians.

Questions on Cliff and Cave Dwellers.

Where were the earliest traces of the cave dwellers found? 513.

What can you say of the state of civilization among these peoples?

According to discovered relics, what animals were known to them?

Where are remains of cliff-dwellers found at present? 602.

Explain the formation of natural cliffs and terraces.

Describe the construction of the houses occupied by cliff-dwellers.

What did they use for windows and doors?

What means for ascent were made to reach these elevated dwellings?

To what extent were they skilled in handicraft and other industries?

What recent discoveries have been made regarding these people?

Describe the industry of pottery among them.

What reason would you assign for the extinction of the cliff-dwellers?

The American Indian.

Not many generations ago, where you now sit, circled with all that exalts and embellishes civilized life, the rank thistle nodded in the wind, and the wild fox dug his hole unscared. Here lived and loved another race of beings. Beneath the same sun that rolls over your heads, the Indian hunter pursued the panting deer; gazing in the same moon that smiles for you, the Indian lover wooed his dusky mate. Here the wigwam blaze beamed on the tender and helpless, the council fire glowed on the wise and daring. Now they dipped their noble limb [illegible] your sedgy lakes, and now they paddled the light canoe along your rocky shores Here they warred; the echoing whoop, the bloody grapple, the defying death-song, all were here; and when the tiger strife was over, here curled the smoke of peace.

Here, too, they worshiped; and from many a dark bosom went up a pure prayer to the Great Spirit. He had not written his laws for them on tables of stone, but he had traced them on the tables of their hearts. The poor child of nature knew not the God of revelation, but the God of the universe he acknowledged in every thing around. He beheld him in the star that sunk in beauty behind his lonely dwelling; in the sacred orb that flamed on him from his mid-day throne; in the flower that snapped in the morning breeze; in the lofty pine, that defied a thousand whirlwinds; in the timid warbler that never left its native grove; in the fearless eagle whose untired pinion was wet in clouds; in the worm that crawled at his feet; and in his own matchless form, glowing with a spark of that Light, to whose mysterious source he bent, in humble, though blind adoration.

And all this has passed away. Across the ocean came a pilgrim bark, bearing the seeds of life and death. The former were sown for you; the latter sprang up in the path of the simple native. Two hundred years have changed the character of a great continent, and blotted forever from its face a whole peculiar people. Art has usurped the bowers of nature, and the children of education have been too powerful for the tribes of the ignorant. Here and there a stricken few remain; but how unlike their bold, untamed, untamable progenitors! The Indian of falcon glance and lion bearing, the theme of the touching ballad, the hero of the pathetic tale, is gone! and his degraded offspring crawl upon the soil where he walked in majesty, to remind us how miserable is man when the foot of the conqueror is on his neck.

As a race, they have withered from the land. Their arrows are broken, their springs are dried up, their cabins are in the dust. Their council-fire has long since gone out on the shore, and their war-cry is fast dying to the untrodden West. Slowly and sadly they climb the distant mountains, and read their doom in the setting sun. They are shrinking before the mighty tide which is pressing them away; they must soon hear the roar of the last wave, which will settle over them forever.

—Charles Sprague.

American Indian

I. Origin.
  1. Name—Given by Columbus.
  2. Race — Probably mixture of European and Asiatic races.

II. Personal Features.
  1. Hair—Long, black and straight.
  2. Beard—Scanty.
  3. Eyebrows—Heavy.
  4. Eyes—Sleepy and dull.
  5. Lips—Compressed.
  6. Cheek bones—High.
  7. Face—Broad.
  8. Hands and feet — Small and well proportioned.
  9. Stature—Varies.

III. Dress.
  1. Skin.
  2. Bark.
  3. Woolen garment.
  4. Decorative dress.
    A. Necklaces.
    B. Earrings.
    C. Bracelets.
    D. Tattooing.
    E. Painting.

IV. Food.
  1. Fruits.
  2. Corn.
  3. Wild rice.
  4. Roots and seed.
  5. Maple syrup.
  6. Tobacco.
  7. Fish, game, eggs.
  8. Beans and squashes.

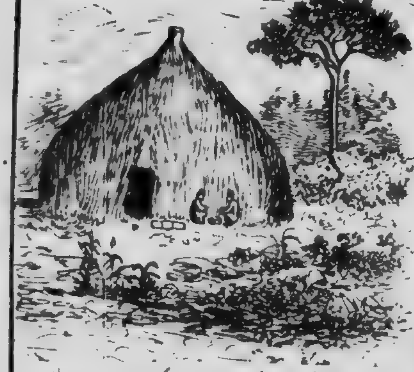
V. Industries.
  1. Hunting.
  2. Fishing.
  3. Agriculture.
  4. Manufactures.

TECUMSEH.
A TYPICAL INDIAN.

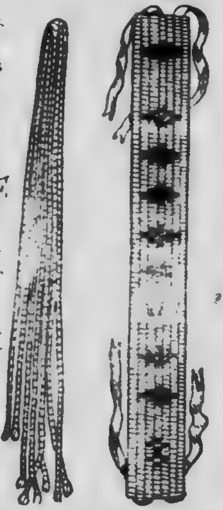
VI. Religion.
  1. Future life.
  2. Spirits.
  3. Virtue and bravery.
  4. Priest and medicine man.
  5. Sun worship.

VII. Manufactures and Implements.
  1. Bows.
  2. Arrowheads.
  3. Pottery.
  4. Snowshoes.
  5. Stone pipes.
  6. Canoes.
  7. Blankets.
  8. Baskets.
  9. Fishhooks.
  10. Knives.
  11. Leather.
  12. Numerous other articles.

VIII. Government.
  1. Divided into clans with chief.
  2. Confederation of tribes.
  3. Loose administrations.
  4. Women's rights limited.
  5. Man's rights supreme.
  6. Punishments severe.
  7. Slavery uncommon.



Indian Hut Built of Grass



Wampum and Wampum Belt.

Indian Cradle.

Ancient Cliff Dweller's Sandal.

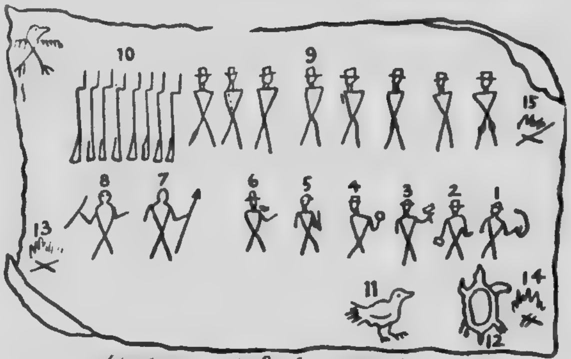
Stone Implements.

Indian Huts Built of Skins.

Indian Manufactures.

Gravestone with Totem of the Bear

Totem Pole.



Specimen of Indian Writing.

Meaning: A captain(1), his secretary(2), one geologist(3) three attendants(4,5,6), two guides(7,8), and eight soldiers(9) with guns(10) encamped here. They ate a prairie hen(11) and a turtle(12) for supper. Three camp fires(13,14,15) were lighted. = B. P. H.

IX. TRIBES AND RACES.

- Algonquins.
- Apaches.
- Arapahoes.
- Aztecs.
- Carib.
- Catawba.
- Cayuga.
- Cherokees.
- Cheyenne.
- Chickasaw.
- Choctaw.
- Comanches.
- Cree.
- Creek.
- Delawares.
- Eskimos.
- Fox.
- Huron.
- Illinois.
- Inca.
- Iowa.
- Iroquois.
- Kickapoo.
- Maya.
- Miami.
- Modocs.
- Mohave.
- Mohawks.
- Mohicans.
- Moki.
- Narragansetts.
- Natchez.
- Navajoes.
- Ojibways.
- Onondaga.
- Osages.
- Ottawas.
- Patagonian.
- Pequots.
- Pottawattamies.
- Pueblo.
- Quichua.
- Sacs and Foxes.
- Seminoles.
- Senecas.
- Shawnees.
- Shoshones.
- Sioux.
- Toltec.
- Tuscaroras.
- Utahs.
- Yakima.
- Yumas.
- Zuñi.

X. INDIAN WARS.

1. Virginia, 1622-1624.
2. Pequot, 1637.
3. King Phillip's, 1675.
4. Cherry and Wyoming Valley massacres, 1777.
5. Miami Confederation wars, in Ohio, 1790-1795.
6. Battle of Tippecanoe, 1811-1813.
7. Creek and Seminole wars, 1817.
8. Black-Hawk War, 1837.
9. Seminole War, 1835-1841.
10. Modock War, 1872.
11. Sioux War, 1876.
12. Apache War, 1884-1886.

XI. DOMESTIC ANIMALS.

1. Dog—Universally used.
2. Turkey—Central America.
3. Horses and cattle—None.
4. Sheep—None.

XII. DWELLINGS.

1. Eskimo hut—Ice, stone, or turf.
2. Wigwam—Poles and skins.
3. Mexico hut—Twigs and leaves.
4. Central America and Peru—Carved stone.
5. New Mexico—Adobe and stone.
6. Arizona—Cliff-dwellers.

XIII. BURIAL.

1. Earth—Graves with relics.
2. Platforms—In trees.
3. Cliffs—Mummies.
4. Caves. 5. Mounds.

XIV. EDUCATION AND PRESENT CONDITION.

1. Citizenship.
    A. Conditions of.
        (a) To waive all claims to public support.
        (b) Right to vote.
2. Government Policy.
    A. To encourage education.
    B. To encourage land ownership.
    C. To make them self-supporting.
3. Department of Indian Affairs.
    A. Oklahoma.
    B. Indian reservations.
4. Educational Advancement and Professions.
    A. Higher institutions of learning.
    B. Indian schools.
    C. Practice of medicine and law.
    D. Publication of newspapers.
    E. Skill in arts and trades.
    F. Scholars and educators.
5. Intermarriage with whites.
    A. Advocated by some tribes.
    B. Opposed by others.
    C. In the past.
        (a) Mostly with Spanish and French.
    D. At present.
        (a) Largely with the Negro race.
    E. Adopting customs of civilization.
        (a) Mostly by the mixed breeds.
6. Number of Indians.
    A. At time of discovery by Columbus.
        (a) East of Mississippi River, estimated 200,000.
        (b) California alone at time of gold discovery, 200,000.
    B. Present Indian population.
        (a) United States, 266,760.
        (b) Canada, 107,978.

Questions on the Indian.

Who gave the Indians their name? Why? 1382.

Was the turkey known to the Indians at the time of the discovery of America? 2940.

Were horses known to the Indians in America at the time of its discovery by Columbus? 1324.

Was timothy grass a native of America before Columbus's time? 2880.

Tell what kind of houses the Mexican Indian builds. The Eskimo Indian. See illustration, 1382.

In what countries did the Indians construct canals? Public highways?

What race of Indians had a calendar in which a year consisted of 365 days, divided into eighteen months of twenty days each? 1741.

What tribe of Indians issued books under the title of "Chilam Balam"?

What was the population of the empire of the Incas in 1532, when it was conquered by the Spanish? 1371.

What tribe of Indians embalmed their dead?

What tribe of Indians domesticated bees? 1741.

What is meant by *Indian Summer* and why so called? 1383.

What are the differences between "Luke's Summer, Old Woman's Summer, and Indian Summer"?

What Indian names were made famous by Longfellow? 1297.

When and why was Indian Territory set apart for Indian reservations? 1383.

How may an Indian become a United States citizen and have the right to hold office?

What is the difference between the Eskimos of North America and those of Siberia?

What is the policy of the government in dealing with the Indians?

Name ten important Indian wars. See outline.

Name five methods of Indian burial. See outline.

What race of Indians taught the art of reading and writing, maintained temples, and sacrificed human beings to their gods? 201.

What tribe of Indians had a priesthood and educated their young for the priesthood?

What race of Indians made sun worship their state religion? 2780.

How did the Indians make their pipes? 2220.

From what did the Indians make their arrowheads? 154.

What can you say about the stone implements of the American Indians? 2749.

What can you say about the basket work of American Indians? 242.

Was the boomerang invented by the Indians? 337.

What is the Indian population at present? See outline.

How and of what material were the houses or dwellings constructed? Outline.

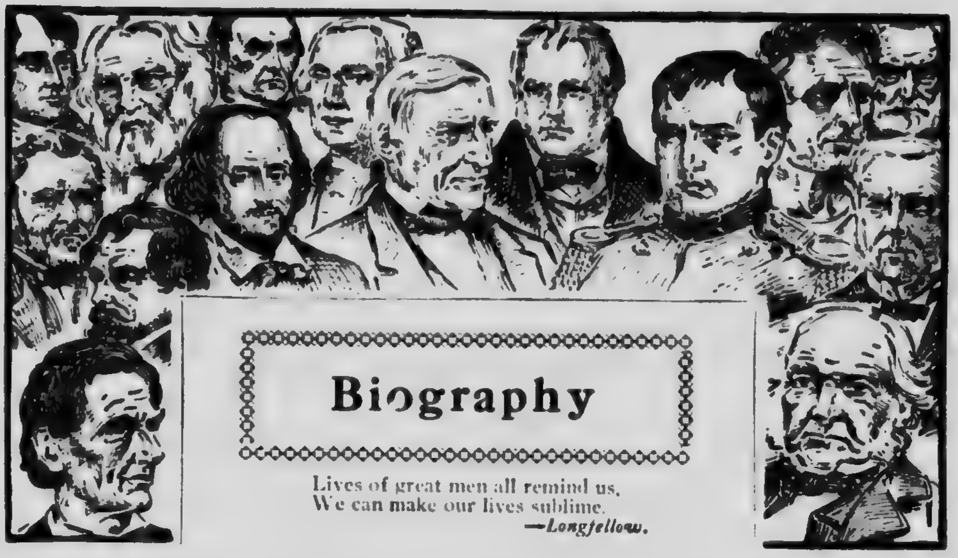
Tell for what each of these Indian chiefs were noted: Joseph Brant, King Philip, Massasoit, Powhatan, Pontiac, Black Hawk, Geronimo, Sitting Bull, Tecumseh, Osceola.

Name some of the ways in which the Indians decorated their dress and person. See outline.

Mention eight articles of food used by the Indian. See outline.

What can you say about the Indians' love for the dog? 1382.

Describe the personal features of the Indian. See outline.



Biography

Lives of great men all remind us,
We can make our lives sublime.
—*Longfellow.*

BIOGRAPHY is properly a department of literature. It includes autobiography, which is the branch of biography that is written by the subject himself.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA contains many thousands of biographies, including subjects of early history as well as those of the most recent time. These biographies are more than mere statements of facts; they expand into the fields of criticism, literature, history, and philosophy. The treatment is such that this department at once becomes invaluable and indispensable to students.

What an influence for good a great character really is! Such a character, the entity and individuality of the possessor, shining from every window of the soul, takes a firm hold upon the lives with which it comes in contact. It is a guiding and molding influence upon others, inspiring to loftier thoughts and nobler deeds.

The biographies treat of both men and women. Indeed, THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA is the pioneer among reference books in publishing portraits and biographies of famous women. It may be consulted with great satisfaction along this line and answers the question, *Who is who?* The following are among the subjects of biographies contained in this work on

Celebrated Women.

Adams, Maude,
Addams, Jane,
Alcott, Louise May,
Alexandria, Queen,
Anne, Queen,
Anthony, Susan B.,
Austen, Jane,
Barton, Clara,
Beatrice Portinari,
Bernhardt, Rosine,
Bonheur, Rosa,
Bremer, Fredrika,
Brontë, Charlotte,
Browning, Elizabeth B.,
Burdette-Coutts, Angela,
Cary, Alice and Phoebe,
Catharine II.,
Catharine de Medici,
Catherwood, Mary Hartwell,
Cenci, Beatrice,
Christina, Queen,
Cleopatra,
Corday, Charlotte,
Darling, Grace,

Dido, Queen,
Eddy, Mary B. G.,
Eliot, George,
Elizabeth, Queen,
Elizabeth (Carman Sylvia),
Eugênie, Queen,
Gould, Helen,
Grey, Lady Jane,
Helen of Troy,
Héloïse (see Abélard),
Howe, Julia Ward,
Hypatia,
Isabella I.,
Jezebel, Queen,
Joan of Arc,
Josephine, Queen,
Lind, Jenny,
Maria Theresa,
Marie Antoinette,
Mary, Queen of Scots,
Nightingale, Florence,
Nordica,
Patti, Adelina,
Pocahontas,
Roland, Marie Jeanne,
Sand, George,
Sappho,
Staël-Holstein, Mme. de,
Stowe, Harriet Beecher,
Victoria, Queen,
Ward, Mary,
Washington, Mary,
Wilcox, Ella Wheeler,
Wilhelmina, Queen,
Willard, Frances E.,
Zenobia, Septimia.

Alphabetical List of Famous People.

Abolitionists—Frémont, Garrison, Phillips, Whittier, Wilberforce.

Actors—Adams, Bernhardt, Booth, Field, Garrick, Irving, Mansfield Marlowe.

Alchemists—Agrippa, Bacon, Lavoisier, Paracelsus, Priestley.

Artists—Copley, Giotto, Ruysdael, Schnorr, Vinci, West.

Astronomers—Brahe, Halley, Herschel, Kepler, Laplace, Newton, Ptolemy.

Authors—Andersen, Bacon, Bryant, Cervantes, Chaucer, Dante, Dickens, Goethe, Homer, Irving, Luther, Milton, Schiller, Shakespeare, Tennyson, Whittier, Wilcox.

Aviators—Langley, Lilienthal, Santos-Dumont, Wright, Zeppelin.

Bible Characters—Abraham, Adam, David, Jeremiah, Jesus, Job, Joshua, Mary, Moses, Noah, Paul, Solomon.

Botanists—Burbank, Engelmann, Gray, Humboldt, Huxley, Linnaeus, Tyndall.

Cartoonists—Cruickshank, McCutcheon, Nast, Opper.

Chemists—Achard, Cavendish, Curie, Dalton, Faraday, Pasteur, Priestley.

Colonists—Balboa, Champlain, De Soto, Drake, Hudson, Raleigh.

Confederate Statesmen—Benjamin, Breckenridge, Davis, Stephens, Yancey.

Discoverers—Columbus, Cook, Cortez, Drake, Emin Pasha, Livingstone, Magellan, Nansen, Peary, Stanley.

Divines—Abbott, Beecher, Gunsaulus, Hillis, Moody, Parker.

Dramatists—Aeschylus, Björnson, Dumas, Ibsen, Jonson, Lessing, Schiller, Sudermann.

Electricians—Ampère, Bell, Edison, Marconi, Ohm, Röentgen, Siemens.

Emperors—Caesar, Charlemagne, Francis Joseph, Maximilian I., Nicholas II., William I.

Engineers—Drummond, Eads, Eiffel, Ericsson, Lesseps, Roebling, Waring.

English Statesmen—Balfour, Burke, Chamberlain, Gladstone, Pitt, Salisbury.

Essayists—Addison, Carlyle, Emerson, Lessing, Locke, Voltaire.

Fathers of the Church—Athanasius, Boniface, Gregory, Irenaeus, Origen, Polycarp.

Federal Statesmen—Blaine, Douglas, Lincoln, Seward, Sumner.

Financiers—Carnegie, Morgan, Sage, Rockefeller, Rothschild, Vanderbilt.

Historians—Bancroft, Bryce, Eggleston, Gibbon, Guizot, Herodotus, von Holst, Hume, Macaulay, Parkman, Plutarch.

Humorists—Clemens, Harte, Nye, Shaw, Stockton, Ward.

Inventors—Bell, Davy, Edison, McCormick, Marconi, Maxim, Mergenthaler, Siemens, Tesla, Whitney.

Journalists—Bennett, Dana, Franklin, Greeley, Hearst, Medill, Pulitzer, Watterson, Young.

Kings—Alexander, Charles V., Christian IX., Edward VII., George III., Henry VIII.

Lawyers—Blackstone, Choate, Confucius, Evarts, Lycurgus, Moses, Solon, Webster.

Librarians—Dewey, Poole, Spofford.

Logicians—Aristotle, Hegel, Kant, Leibnitz, Mill, Zeno.

Mathematicians—Archimedes, Gunter, Legendre, Newton, Pythagoras, Thomson.

Merchants—Astor, East India Companies, Girard, Hudson's Bay Company, Field, Law, Wanamaker.

Missionaries—Elliot, Jesuits, Livingstone, Moffat, Xavier.

Musicians—Abt, Beethoven, Bull, Lind, Liszt, Mendelssohn, Mozart, Paderewski, Strauss, Wagner.

Naturalists—Agassiz, Audubon, Cuvier, Darwin, Haeckel.

Naval Commanders—Dewey, Farragut, Jones, Nelson, Themistocles, Togo, Tromp.

Novelists—Andersen, Balzac, Björnson, Boccaccio, Cooper, Daudet, Dumas, Ebers, Freytag, Howells, Stevenson, Tolstoi.

Orators—Antiphon, Bryan, Burke, Cicero, Demosthenes, Erskine, Henry, Ingersoll, Phillips, Webster.

Painters—Angelo, Burne-Jones, Correggio, Menzel, Murillo, Raphael, Rembrandt, Rubens, Sargent, Titian, Whistler.

Patriots—Bozzaris, Bruce, Egmont, Joan of Arc, Kosciusko, Philopoemen, Revere, Tell, Winkelried.

Philanthropists—Childs, Cooper, Durant, Girard, Hirsch, Peabody.

Philosophers—Anaxagoras, Edwards, Fichte, Galileo, Leibnitz, Locke, Ptolemy, Schelling, Spinoza, Thales, Zeno.

Physicians—Hahnemann, Harvey, Koch, Lorenz, Pasteur, Senn, Virchow.

Physicists—Archimedes, Fahrenheit, Helmholtz, Tyndall, Torricelli.

Poets—Browning, Bryant, Burns, Byron, Chaucer, Dryden, Euripides, Goldsmith, Heine, Longfellow, Lowell, Uhland, Whittier, Wordsworth.

Political Economists—Bagehot, Cobden, Ely, Fawcett, Franklin, Mill.

Preachers—Chrysostom, Kempis, Moody, Wesley, Wycliffe, Xavier.

Presidents—(See articles under their names).

Printers—Caxton, Coster, Elzevir, Faust, Gutenberg.

Psychologists—Aristotle, Berkeley, Cousin, Hegel, Herbart, Hume.

Queens—Catharine, Cleopatra, Elizabeth, Irene, Isabella, Maria Theresa, Victoria.

Reformers—Anthony, Blackwell, Bloomer, Mott, Stanton.

Scientists—Agassiz, Buffon, Bunsen, Cuvier, Dalton, Liebig.

Sculptors—Bartholdi, Donatello, Dürer, Greenough, Hosmer, Houdon, Phidias, Powers, Raphael, Rauch, Saint Gaudens, Thompson, Thorwaldsen, Vinci.

Singers—De Reszke, Lind, Nordica, Patti, Sankey, Sembrich, Sontag.

Socialists—Debs, Fourier, Marx, Owen.

Social Reformers—Adams, Adler, Debs, Gerry.

Soldiers—Alexander, Blücher, Caesar, Cromwell, Frederick the Great, Grant, Hannibal, Lee, Washington, Wellington.

Statesmen—Bismarck, Blaine, Bolingbroke, Davis, Everett, Gladstone, Laurier, Lincoln, Monroe, Roosevelt.

Suffragists—Anthony, Bloomer, Lockwood, Mott, Stanton.

Teachers—Ascham, Eliot, Erasmus, Froebel, Mann, Pestalozzi, Quintilian.

Temperance Workers—Bidwell, Dow, Fish, Gough, Saint John, Willard.

Theologians—Beecher, Campbell, Huss, Luther, Walther, Zwingli.

Warriors—Alfred the Great, Charlemagne, Gustavus Adolphus, Napoleon, Timur, Washington, Wallenstein, Xeniphon.

Writers, American—Cooper, Emerson, Holmes, Lowell, Motley, Roosevelt, Thoreau.

Writers, Canadian—Bourinot, Bryce, Campbell, Carman, Drummond, Galt, Parker, Smith.

Writers, English—Ascham, Bunyan, Carlyle, Coleridge, Dryden, Gray, Ruskin.

Zoölogists—Agassiz, Cuvier, Dana, Darwin, Haeckel, Linnaeus, Spencer, Weismann.

Questions on Biography.

296. What is biography? Distinguish between biography and autobiography.

What benefits are derived from the study of great lives?

Name six prominent American statesmen and six Canadian statesmen.

Who reigned longest of the English sovereigns? 922.

To whom do the following titles belong: "The Pen of the Revolution," "The Expounder of the Constitution," "The Father of His Country," "The Pacificator," and "The Hero of Quebeck"

Give a list of noted artists and their best paintings.

Mention some of the renowned poets of the present age.

Write a brief sketch of the life of Shakespeare.

What prominence did G. M. Adams, Alexander McKenzie, Goldwin Smith, and Joseph Howe hold in Canadian literature?

State some notable feature connected with the life of Pasteur, Marconi, Sampson, Santa Anna, Aali Pasha, Montcalm, Gladstone, Frances E. Willard, Milton, and Socrates.

Contrast the life of Queen Elizabeth with that of Mary, Queen of Scots.

Death of Schiller.

'Tis said, when Schiller's death drew nigh,
The wish possessed his mighty mind,
To wander forth wherever lie
The homes and haunts of humankind.

Then strayed the poet, in his dreams,
By Rome and Egypt's ancient graves;
Went up the New World's forest streams,
Stood in the Hindoo's temple-caves.

Walked with the Pawnee, fierce and stark,
The bearded Tartar, 'midst his herds,
The peering Chinese, and the dark
False Malay uttering gentle words.

How could he rest? even then he trod
The threshold of the world unknown;
Already, from the seat of God,
A ray upon his garments shone;—

Shone and awoke that strong desire
For love and knowledge reached not here,
Till death set free his soul of fire,
To plunge into its fitting sphere.

Then—who shall tell how deep, how bright,
The abyss of glory opened round?
How thought and feeling flowed like light,
Through ranks of being without bound?

—*Bryant.*

Champlain.

I. Early Life.

1. Born in Brouage, France, in 1567, of French Catholic parents.
2. Son of a ship captain.
3. Carefully trained in principles of navigation and cartography.
4. Entered army when young and became a quartermaster of cavalry.
5. Uncle was pilot general of Spanish fleets.

II. Public Career.

1595 —Distinguished himself in war against Spain, attracting the attention of Henry IV.

1599 —Took command of Saint Julien and sailed to West Indies, remaining two years and a half and then returning by way of the Isthmus of Panama.

Wrote records of voyage, made views and charts, and proposed plan for channeling the Isthmus.

SAMUEL DE CHAMPLAIN.

1603-04—First two voyages to Canada.
Sailed up Saint Lawrence.
Explored and mapped coast as far as Cape Cod.
Discovered lakes Champlain, Huron, and Erie.

1608 —Founded Quebec.
Erected houses.
Sowed grain.
Developed fur trade.
Joined Hurons and Algonquins.

1609 —Fought against Iroquois.

1610 —Returned to France and married Mademoiselle Hélène Boulè, a Protestant girl, who became a Ursuline nun after his death.

1611 —Planted settlement at Montreal.

1612-29—Governor of Canada.
Defeated by Britains and carried captive to England.

1632 —Restored to liberty.

1633 —Returned to Canada.

1635 —Died in Quebec on Christmas.

III. Aims.

1. Christianize the natives.
2. Explore new lands.
3. Discover shorter route to China.

IV. Characteristics.

1. Bold and fearless.
2. Farseeing and resourceful.
3. Full of tact in his dealings.
4. A born commander.
5. Of adventurous spirit.
6. "His purse was small, his merit great."
7. Known as the "Father of New France."

Test Questions on Champlain.

Of what nationality was Champlain? 530.
Tell all you can about his early life.
How did he distinguish himself at an early age?
Of whom did he receive a commission to make settlements in America?
How long did he remain in the West Indies?
Of what city of Canada is he the founder? How did he assist the settlers?
With what success did he meet in Christianizing the Indians?
Describe his first two expeditions to Canada.
By what means is his name perpetuated?
When and whom did he marry? What did his widow become after his death?
What exalted position did he hold in Canada?
Why was he called the "Father of New France"?
For what reason was he taken captive to England? Was he ever liberated?
Tell which of his characteristics are worthy of patterning.
Where and at what age did he die?

Columbus.

How in God's name did Columbus get over
Is a pure wonder to me, I protest,
Cabot, and Raleigh too, that well-read rover,
Frobisher, Champlain, Drake, and the rest.
Bad enough all the same,
For them that after came,
But, in great Heaven's name,
How *he* should ever think
That on the other brink
Of this wild waste *terra firma* should be,
Is a pure wonder, I must say, to me

How a man ever should hope to get thither,
E'en if he knew that there was another side;
But to suppose he should come any whither,
Sailing straight on into chaos untried,
In spite of the motion
Across the whole ocean,
To stick to the notion
That in some nook or bend
Of a sea without end
He should find North and South America,
Was a pure madness, indeed I must say, to me.

What if wise men had, as far back as Ptolemy,
Judged that the earth like an orange was round,
None of them ever said, "Come along, follow me,
Sail to the West, and the East will be found."
Many a day before
Ever they'd come ashore,
From the *San Salvador*,
Sadder and wiser men
They'd have turned back again;
And that *he* did not, but did cross the sea,
Is a pure wonder, I must say, to me.

—*Arthur Hugh Clough.*

Washington.

Birthday, Feb. 22, 1732.
Death, Dec. 14, 1799.
Parents.
- Augustine Washington.
- Mary Ball (2nd wife).

GEORGE WASHINGTON.

Education.
- Elementary subjects.
- Mathematics.

Profession.
- Surveyor.
- Adjutant general (1751).
- Lieutenant colonel (1754).
- Aid-de-camp to Braddock (1755).

Revolution.
- Commander in chief.

President.
- Two terms (1789-1797).
- Events.
  1. Admission of Ky., Vt., Tenn.
  2. Federal assumption of debts.
  3. Indian wars in Northwest Territory.
  4. Founding of Washington.
  5. Establishment of first U. S. Bank (1791).
  6. Whisky Insurrection (1794).
  7. National mint established in Philadelphia.
  8. Adjustment of important treaties with other countries.
  9. Jay's Treaty with England ratified (1796).
  10. Naturalization changed to five years (1796).

Married.
- Martha Custis (widow), 1759.
- Childless.
- Grandchildren of widow (adopted two).

Residence.
- Mount Vernon—
  - Planter 16 years.
  - Owned 125 slaves.
  - Magistrate.
  - Member of Legislature.
  - First and Second Continental Congresses.

Character and appearance.
- Dignified.
- Thoughtful.
- Studious.
- "Towered above party strife."
- "First in war, first in peace, first in the hearts of his countrymen."

Burial.
- Mount Vernon.

Where may the wearied eye repose
  When gazing on the great,
Where neither guilty glory glows
  Nor despicable state?
Yes,—one, the first, the last, the best,
  The Cincinnatus of the West,
Whom envy dared not hate,
  Bequeathed the name of Washington
  To make men blush there was but one.

—*Lord Byron.*

Questions on Washington.

Who was Washington's grandfather and from what country was he a native?

When did Washington's father die? How old was George at the time?

Who was the mother of George Washington?

Who was the wife of George Washington? When was she born?

Why is Washington and Lee University so named?

What can you say about Washington's memorial arch in New York City?

Where is Washington's Elm located and for what noted?

When did the popular movement for a national memorial for Washington begin?

What is the height of the Washington monument at Washington, D. C.? When was the cornerstone laid? When was it [illegible]? What did it cost? Who selected the site of the Washington monument?

How many slaves did Washington keep? When were they emancipated and how?

Did Washington have any children? [illegible] many [illegible] did he a[illegible]t?

To what lodges did he belong?

What were the dying words of Washington? [illegible]

What did Washington say on declining [illegible] on the occasion of his inauguration in 1789? 3236.

What does Washington say about bad company and self-esteem? 3239.

Give a quotation from Washington on the [illegible] of his country. 3218.

Name five important events that occurred during Washington's administration.

What can you say about his dignity and self-control?

In what battle did Washington have two horses shot under him?

In what year did Washington issue his farewell address? Describe his personal appearance.

What eulogy did Peter Cooper pass upon Lincoln and Washington? 3236.

What can you say about the domestic life of Washington?

What is said of Mrs. Washington in regard to caring for sick soldiers?

When did Mrs. Washington die? Did she like official life? What did she do with Washington's love letters? What can you say about her dress?

From whom did Washington receive the estate at Mount Vernon? What was the date of his marriage?

What can you say of Washington as a statesman and a lawyer?

The Twenty-Second of February.

Pale is the February sky,
And brief the mid-day's sunny hours;
The wind-swept forest seems to sigh
For the sweet time of leaves and flowers.

Yet has no month a prouder day,
Not even when the summer broods
O'er meadows in their fresh array,
Or Autumn tints the glowing woods.

For this chill season now again
Brings, in its annual round, the morn
When, greatest of the sons of men,
Our glorious Washington was born!

Amid the wreck of thrones shall live,
Unmarred, undimmed, our hero's fame;
And years succeeding years shall give
Increase of honors to his name.

—*Bryant.*

Napoleon.

Birth.

1. Born at Ajaccio, island of Corsica, Aug. 15, 1769; died at Saint Helena, May 5, 1821.

Parents.

1. Father, Charles Bonaparte; mother, Letizia Ramolino.

Education.

1. Military school at Brienne, as a pensioner to the king, five years.
2. Military school at Paris, received commission, lieutenant of artillery, in 1785.

Marriage.

1. March 9, 1796, married Josephine Beauharnais; no children.
2. April 2, 1810, divorced Josephine; married Marie Louise of Austria; one son born March 20, 1811, known as Napoleon II.

NAPOLEON BONAPARTE.

Public Life.

1. Stationed at Valence during French Revolution; attempted to conquer the Corsican cities for France.
2. Lieutenant colonel of artillery in 1793.
3. Captured Toulon from British; made brigadier general of artillery in 1784.
4. In 1785, given command of army of interior.
    - a. French forces, 40,000; Austrians and Sardinians, 75,000.
    - b. Captured the Appenines by defeating Austrians at Montenotte.
    - c. Took all Northern Italy after Battle of Lodi, May 10, 1796; required the Pope to cede part of his dominion to France.
    - d. Defeated Austrians at Bassano, Roveredo, Rivoli, and other points, compelling Austria to make peace.
    - e. Peace treaties with Modena, Parma, and Naples; treaty with Austria gave Lombardy to Netherlands and Ionia to France.
5. Directory sent Napoleon to Africa in 1798.
    - a. Reduced Malta en route; July 1st, landed at Alexandria.
    - b. July 4th, reduced Alexandria; captured Cairo July 24th, winning the Battle of the Pyramids.
    - c. Overran all Egypt and most of Palestine.
    - d. Defeated at Acre and fleet was destroyed in the Bay of Aboukir by Nelson, July 25th.
    - e. Nearly annihilated the Turkish army at Aboukir.
    - f. Left Egyptian army with General Kléber and returned to France to help restore order and confidence.
6. Abolished the Directory Nov. 9, 1799.
7. Caused the adoption of a new constitution.
    - a. This provided for three consuls.
        - A. First Consul, Napoleon.
        - B. Second Consul, Cambaceres.
        - C. Third Consul, Lebrun.
8. Napoleon and Josephine occupied the palace of the kings in the Tuileries.
9. Constructed highways and canals; reorganized the army; invented the metric system.
10. In 1800 went by way of the Great Saint Bernard pass and defeated the Austrians at Marengo.
11. Won the Battle of Hohenlinden.

12. **By the Peace of Luneville, acquired all Italy.**
13. Subsequent treaties were made with Portugal, Spain, Bavaria, Naples, Turkey, and Russia.
14. In 1802 forced Great Britain into the Treaty of Amiens.
15. He reformed local government.
    a. Established schools.
    b. Revised the code of laws.
    c. Founded the Bank of France.
    d. Established universities.
    e. Defined powers of the church.
    f. Encouraged industrial arts and sciences.
16. In 1802, made Consul for life; in May, 1804, crowned Emperor; Josephine made Empress of France.
17. May 26, 1805, he was crowned King of Italy; his stepson, Eugène Beauharnais, became his viceroy.
18. In 1805 Napoleon invaded Germany, defeated a large army at Ulm, captured Vienna, and, Dec. 2d, won the Battle of Austerlitz.
    a. His brother Joseph was made King of Naples; Louis, King of Holland.
19. Defeated Prussians and Russians at Jena and captured Berlin.
    a. Made his brother Jérôme King of Westphalia.
20. In June, 1807, defeated the Russians at Friedland.
21. Formed compact with Emperor Alexander I.
    a. By which Russia took Finland and part of Prussian Poland.
    b. King of Prussia kept one-half of his former dominions.
22. Napoleon issued his "Milan Decree," closing ports of Europe.
23. English army defeated him in Portugal.
24. In 1807 he defeated the Portuguese and English and made his brother Joseph King of Spain. His brother-in-law, Murat, became King of Naples.
25. Austria declared war against Napoleon in 1809.
26. Napoleon was defeated at Aspern and Esslingen.
27. July 6, crushed opposing forces completely at Wagram. Francis Joseph ceded France more territory.
28. Height of his power in 1810 and 1811.
29. Married Marie Louise of Austria in 1810; son born in 1811.
30. Napoleon declared war against Russia in 1812.
    a. Defeated Russians at Borodino; reached Moscow.
    b. Inglorious retreat.
31. Prussia, Spain, Russia, Great Britain and Sweden formed an alliance against him; Napoleon defeated them at Lützen May 2, 1813.
    a. Again defeated the united armies at Bautzen and Dresden.
    b. Napoleon withdrew to Leipsic and was defeated in the "Battle of Nations," Oct. 16, 18 and 19.
32. In 1814, defeated Blücher in four engagements.
33. March 30, 1814, allied armies captured Paris.

a. April 5, 1814, abdicated at Fontainebleau.
A. Retained title of Emperor.
B. Sovereignty of Isle of Elba.
C. Louis XVIII. restored to throne of France.
34. After ten months at Elba, Napoleon returned to Frejus. Louis XVIII. fled.
35. Again a powerful army surrounded him.
36. The allied armies began a march at once upon France.
a. He defeated Blücher at Ligny, June 16.
b. Lost the Battle of Waterloo.
A. Surrendered to Captain Maitland of British man-of-war.
B. Kept a prisoner for life at Saint Helena, under charge of Sir Hudson Lowe.
37. Last words, "Head of the army."

BURIED.
1. On the Island of Saint Helena for twenty years.
2. Remains removed to France and placed in a magnificent tomb in the Hotel des Invalides, Dec. 15, 1840.

Questions on Napoleon.

Why did Napoleon divorce Josephine and marry Marie Louise? 1895.
Who invented the metric system? See outline.
What is known as the "Battle of Nations"? 1896.
Who issued the famous "Milan Decree"? See outline.
What defeated Napoleon on his Russian campaign?
From what you know of Napoleon, was his life a success?

Nearly one hundred years ago Napoleon said, "The day will come when Europe, and especially England, will lament that they did not let me conquer those northern barbarians" (speaking of Russia). Has England had cause recently to remember it?

Napoleon Bonaparte.

He is fallen! We may now pause before that splendid prodigy, which towered among us like some ancient ruin, whose frown terrified the glance its magnificence attracted. Grand, gloomy, and peculiar, he sat upon the throne, a sceptred hermit, wrapt in the solitude of his own originality. A mind, bold, independent, and decisive,—a will despotic in its dictates—an energy that distanced expedition and a conscience pliable to every touch of interest, marked the outline of this extraordinary character—the most extraordinary, perhaps, that, in the annals of this world, ever rose, or reigned, or fell.

Flung into life in the midst of a revolution that quickened every energy of a people who acknowledge no superior, he commenced his course, a stranger by birth, and a scholar by charity! With no friend but his sword, and no fortune but his talents, he rushed into the lists where rank and wealth and genius had arrayed themselves, and competition fled from him as from the glance of destiny. He knew no motive but interest—he acknowledged no criterion but success—he worshipped no God but ambition, and, with an Eastern devotion, he knelt at the shrine of his idolatry.

—*Charles Phillips.*

Franklin.

BIRTH.

1. Boston, Mass., Jan. 17, 1706; died in Philadelphia, Pa., April 19, 1790.
2. The fifteenth of seventeen children.

BENJAMIN FRANKLIN.

PARENTS.

1. Emigrated to America in 1685; father's name, Josiah Franklin; tallow chandler and soap boiler.

EDUCATION.

1. Early education limited; apprenticed as printer to his brother; went to Philadelphia when he was seventeen, landed with $1.25; when 21 had saved enough to buy the *"Pennsylvania Gazette"*; loved books and was a versatile reader; granted academic degrees by Oxford and Edinborough; elected member of Royal Society of England.

MARRIAGE.

1. To Deborah Reed, when 22 years of age.

PUBLIC LIFE.

1. Deputy general of British colonies in 1753.
2. Member of Albany convention (1754).
3. Agent of Pennsylvania in England, in 1757-62; again from 1764 until the Revolution.
4. Presented the first petition of the American Congress to King of England.
5. Elected a member of Congress on return to America.
6. Favored the Declaration of Independence.
7. Commissioner plenipotentiary to France in 1776; obtained large loans and other concessions; concluded an alliance with France; later made a treaty with England; still later a commercial treaty with Prussia.
8. Chosen President of Pennsylvania in 1785.
9. Delegate to the Federal Convention, in 1787, making the Constitution.

INVENTIONS.

1. Regarding the theory of positive and negative electricity.
2. Electricity and lightning are identical.
3. Lightning rod, or conductor.

WRITINGS.

1. *Poor Richard's Almanac*—Printed for 25 years (1732-57).
2. Papers on scientific subjects, political economy, and antislavery.
3. Autobiography incomplete at death

CHARACTER.

1. Noble, frugal, honest.

BURIAL.

1. With his wife in the yard of Christ Church. Fifth and Arch streets, Philadelphia, Pa.

Questions on Franklin.

Is the epitaph Franklin wrote engraved on his monument? 1056.

Is the plain marble slab erect or horizontal on Franklin's grave?

How did Franklin prove electricity and lightning to be identical?

Why do children like to read anything Benjamin Franklin wrote? Which of his writings is read extensively in schools? 1056.

Whom did Franklin marry? When?

Write two hundred words on the subject, "The Service of Benjamin Franklin to His Country."

The Way to Wealth.

From Poor Richard's Almanac.

I have read that nothing gives an author so great pleasure as to find his words respectfully quoted by others. Judge, then, how much I must have been gratified by an accident I am going to relate to you. I stopped my horse lately where a great number of people were collected at an auction of merchants' goods. The hour of the sale not being come, they were conversing on the badness of the times; and one of the company called to a plain, clean old man with white locks: "Pray, Father Abraham, what think you of the times? Will not these heavy taxes quite ruin the country? How shall we ever be able to pay them? What would you advise us to do?" Father Abraham stood up and replied: "If you would have my advice, I will give it you in short; for *A word to the wise is enough*, as Poor Richard says." They joined in desiring him to speak his mind, and gathering round him he proceeded as follows:

"Friends," said he, "the taxes are indeed very heavy, and if those laid on by the government were the only ones we had to pay, we might more easily discharge them, but we have many others and much more grievous to some of us. We are taxed twice as much by our idleness, three times as much by our pride, and four times as much by our folly, and from these taxes the commissioners cannot ease or deliver us by allowing an abatement. However, let us hearken to good advice, and something may be done for us; *God helps them that help themselves*, as Poor Richard says.

"It would be thought a hard government that should tax its people one-tenth part of their time, to be employed in its service, but idleness taxes many of us much more; sloth, by bringing on diseases, absolutely shortens life. *Sloth, like rust, consumes faster than labor wears, while the used key is always bright*, as Poor Richard says. *But dost thou love life, then do not squander time, for that is the stuff life is made of*, as Poor Richard says. How much more than is necessary do we spend in sleep, forgetting that *The sleeping fox catches no poultry*, and that *There will be sleeping enough in the grave*, as Poor Richard says.

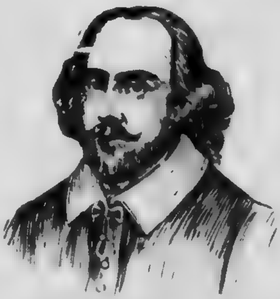
"*If time be of all things the most precious, wasting time must be*, as Poor Richard says, *the greatest prodigality*, since, as he elsewhere tells us, *Lost time is never found again, and what we call time enough always proves little enough*. Let us then up and be doing, and doing to the purpose; so by diligence shall we do more with less perplexity. *Sloth makes all things difficult, but industry all things easy*; and *He that riseth late must trot all day, and shall scarce overtake his business at night*; while *Laziness travels so slowly, that Poverty soon overtakes him. Drive thy business, let not that drive thee*; and *Early to bed and early to rise, makes a man healthy, wealthy, and wise*, as Poor Richard says.

"So what signifies wishing and hoping for better times; we may make these times better if we bestir ourselves. *Industry need not wish, and he that lives upon hopes will die fasting. There are no gains without pains; then help hands, for I have no lands*, or if I have they are smartly taxed. *He that hath a trade hath an estate, and he that hath a calling hath an office of profit and honor*, as Poor Richard says; but then the trade must be worked at and the calling followed, or neither the estate nor the office will enable us to pay our taxes. If we are industrious we shall never starve, for *At the working man's house hunger looks in but dares not enter*. Nor will the bailiff nor the constable enter, for *Industry pays debts, while despair increaseth them*. What though you have found no treasure, nor has any rich relation left you a legacy, *Diligence is the mother of good luck, and God gives all things to industry. Then plough deep while sluggards sleep, and you shall have corn to sell and to keep*. Work while it is called to-day, for you know not how much you may be hindered to-morrow. *One to-day is worth two to-morrows*, as Poor Richard says."

Shakespeare.

Birth.

1. Born in Stratford-on-Avon, England, April 23, 1564; died April 23, 1616.



WILLIAM SHAKESPEARE.

Parents.

1. John Shakespeare and Mary Arden. Family consisted of four sons and four daughters. William was the third child.
2. His parents had very little education; not financially well to do.

Education.

1. Attended grammar school at Stratford; his father failed financially and William was taken from school and apprenticed to a butcher; worked as a lawyer's clerk a short time.

Marriage

1. At the age of eighteen, Anne Hathaway, who was twenty-six years old.
    a. One son and two daughters were born: Susanna, Judith, and Hamnet.
2. In 1586 took up residence in London; engaged as player and dramatist; rose rapidly.
3. More eminent as a playwright than as an actor.

Character.

1. Henry Chettle's apology for a criticism: "I am as sorry as if the originall fault beene my fault, because myself have seene his demeanor no less civill than his exclent in the quality he professes: besides, divers of worship have reported his uprightness of dealing which argues his honesty, and his felicitous grace in writing that approves his art."

Writings.

1. First Class.
    a. Historical.
        A. *Henry VI., Richard II., Richard III., King John, Henry IV., Henry V.,* and *Henry VIII.*
2. Second Class.
    a. Semi-historical.
        A. *Titus Andronicus, Hamlet, King Lear, Macbeth, Julius Caesar, Antony and Cleopatra, Coriolanus,* and *Cymbeline.*
3. Third Class.
    a. Fictitious.
        A. *Love's Labor Lost, Comedy of Errors, Two Gentlemen of Verona, A Midsummer Night's Dream, The Merchant of Venice, Romeo and Juliet, Much Ado About Nothing, Twelfth Night, As You Like It, Taming of the Shrew, Pericles, Merry Wives of Windsor, Measure for Measure, All's Well That Ends Well, Timon of Athens, Troilus and Cressida, Othello, Winter's Tale,* and *The Tempest.*

Friends and Contemporaries.

1. Queen Elizabeth, James I., Drayton, Ben Jonson, Francis Bacon

Burial.

1. In chancel of Stratford church.

2. Inscription on tombstone:

Good friend for Jesus sake forbeare
To digg the dust enclosed heare:
Bleste be the man that spares these stones,
And curst be he who moves my bones.

This prevents a removal of the remains to Westminster Abbey.

Questions on Shakespeare.

How did Shakespeare happen to go to London to live? 2603.
What story is told of how he contracted the fever of which he died?
Was he good looking? Large or small?
How did Shakespeare get the style and title *Gentleman?*
What was the effect of his *Rape of Lucrece?*
What German writer is often compared to Shakespeare? 1159.
Mention ten English contemporary writers of Shakespeare. 919.
Speak of his position or rank as a dramatist. 826.

The Shakespeare Ode.

Then Shakespeare rose!
Across the trembling strings
His daring hand he flings,
And lo! a new creation glows!
There, clustering round, submissive to his will,
Fate's vassal train his high commands fulfill:—

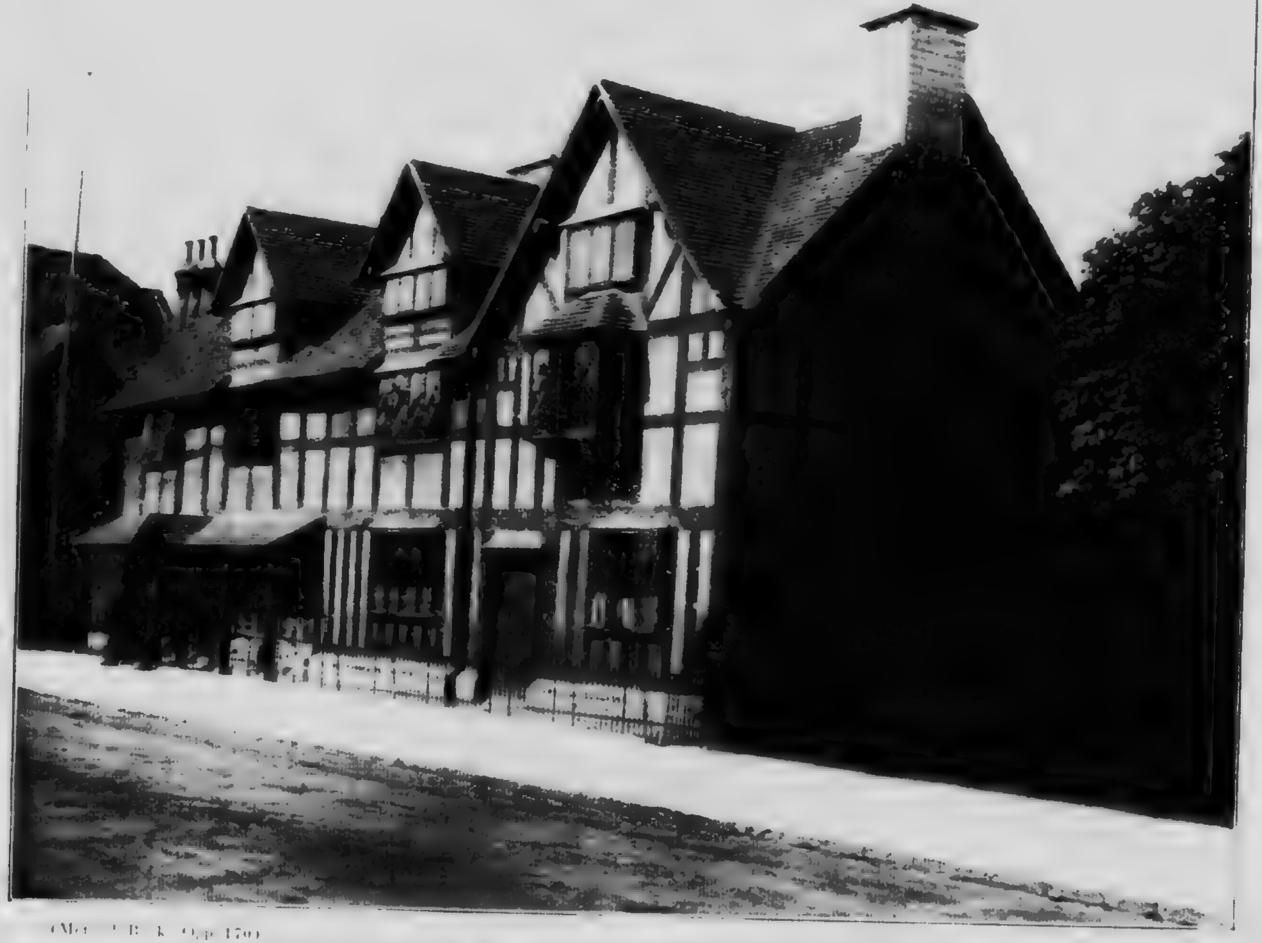
Madness, with his frightful scream,
Vengeance, leaning on his lance,
Avarice, with his blade and beam,
Hatred, blasting with a glance;
Remorse that weeps, and Rage that roars,
And Jealousy that dotes, but dooms, and murders yet adores;
Mirth, his face with sunbeams lit,
Waking Laughter's merry swell,
Arm in arm with fresh-eyed Wit,
That waves his tingling lash, while Folly shakes his bell.

Despair that haunts the gurgling stream,
Kiss'd by the virgin moon's cold beam,
Where some lost maid wild chaplets wreathes
And swan-like, there her own dirge breathes,
Then broken-hearted sinks to rest,
Beneath the bubbling wave that shrouds her maniac breast.

Young Love with eye of tender gloom,
Now drooping o'er the hallowed tomb
Where his plighted victims lie,
Where they met, but met to die.
And now, when crimson buds are sleeping
Through the dewy arbor peeping,
Where Beauty's child, the frowning world forgot,
To youth's devoted tale is listening,
Rapture on her dark lash glistening,
While fairies leave their cowslip cells, and guard the happy spot.

Thus rise the phantom throng,
Obedient to their Master's song,
And lead in willing chains the wondering soul along.

—*Charles Sprague.*



(Mod. E. R. Bk. Op. p. 170)

THE HOUSE WHERE SHAKESPEARE WAS BORN

Fine Arts

THE fine arts, as understood at present, include the departments of art which primarily employ the imagination and taste in the production of what is beautiful. Architecture, painting, and sculpture are distinctly fine arts, but the term is often extended to include engraving, music, and poetry.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA contains many hundreds of articles relative to these topics. The treatment is according to the most approved methods of teaching, taking up the general subject from these standpoints—the artistic, biographical, and historical. This treatment commends itself to the student because it furnishes information from different points of view. The *artistic* furnishes knowledge of a particular art; the *biographical* deals with the life of the individual artist; and the *historical* places the products within a certain country or a particular era.

A study of the fine arts has a refining influence. It brings the mind in contact with the most beautiful products of man. As an environment to the student and the scholar, no other branch of knowledge so completely comes in touch with the higher nature. In this sense it is far-reaching in stimulating the imagination and furnishing material for continuity of thought.

Architecture.

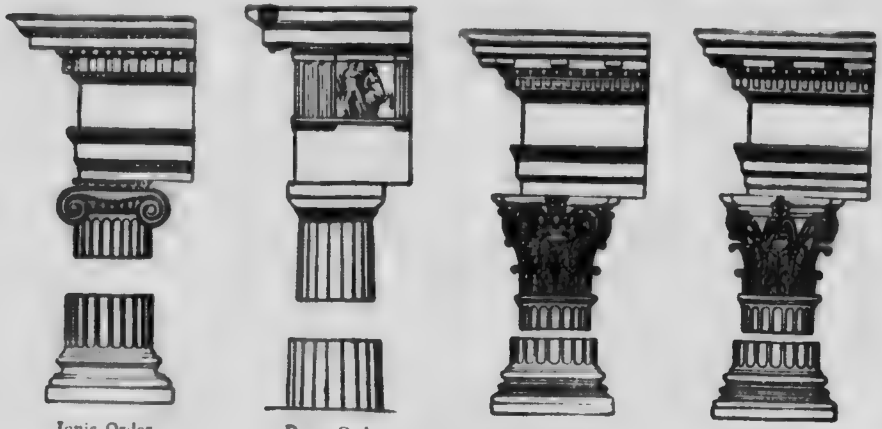
Architecture occupies a foremost position among the fine arts. Although it may be said to include all kinds of construction, in a higher sense it relates only to the buildings which please the eye, gratify the mind, or answer utilitarian purposes.

For the purpose of study, the subject is usually divided with reference to the purposes that the structures serve in the economy of life. This gives rise to a large number of classifications, but, as a matter of convenience, we confine them to the three headings of civil, military, and religious. Many of the articles to which reference is made are further explained by correlated topics, giving the student a wide range of information.

Outline.

I. Civil Architecture.

Amphitheater.
Aqueduct.
Arch.
Arch Triumphal.
Bath (Bathing).
Bridge.
Canal.
Capitol.
Catacombs.
Circus.
Colosseum.
Column.
Elevator.
Forum.
Fountain.
Fresco.
Hotel.
Louvre.
Luxembourg.
Palais Royal.
Pyramid.
Sphinx.
Sewer (Sewerage).
Theater.
Tomb
Tuileries.
Tunnel.
Vault.
Westminster Abbey.
White House.



Ionic Order. Doric Order. Composite Order. Corinthian Order.

STYLES OF COLUMNS.

II. Military Architecture.

Abatis.
Acropolis.
Buttress.
Castle.
Citadel.
Fortification.
Pontoon.
Portcullis.
Prisons.

III. Religious Architecture.

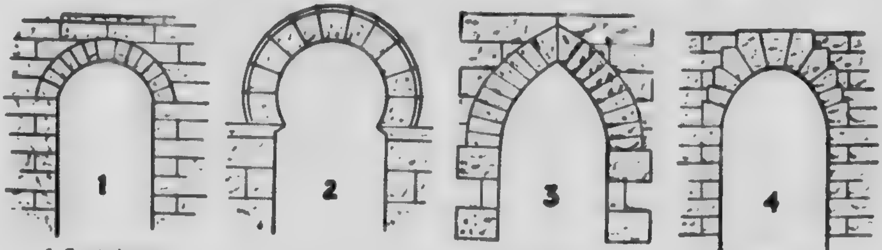
Alhambra.
Altar.
Babel, Tower of.
Basilica.
Cathedral.
Church.
Minaret.
Monastery.
Mosque.
Oratory.
Pagoda.
Pantheon.
Peter's, Saint.
Pitti Palace.
Sophia, Church of Saint.
Tabernacle.
Taj Mahal.
Temple.

Builders and Architects.

Angelo, Michael.
Bernini, Giovanni.
Brunelleschi, Filippo.
Cheops.
Chephren.
Eads, James Buchanan
Hunt, Richard Morris.
Jones, Inigo.
McKim, Charles Follen.
Paxton, Sir Joseph.
Richardson, Henry Hobson.
Roebling, Washington A.
Solomon.
Street, George Edmund.
Walter, Thomas Ustick
Waring, George Edwin
Waterhouse, Alfred.
Wren, Sir Christopher.

Correlated Subjects.

Acoustics.
Acropolis.
Adobe.
Arch.
Asphalt.
Brick.
Bungalow.
Carving.
Cement.
Clay.
Concrete.
Dome.
Façade.
Gable.
Gothic Architecture.
Granite.
Gravel.
Iron.
Lime.
Limestone.
Lumber.
Marble.
Mosaics.
Roof.
Sand.
Stadium.
Slate.
Steel.
Stone.
Terra Cotta.
Tile.
Window.



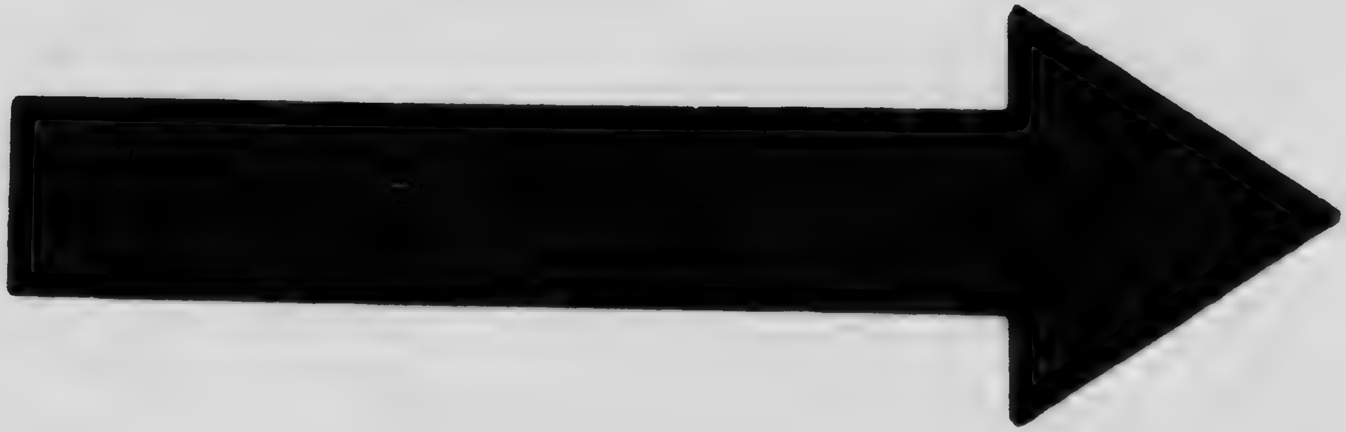
1. Semi-circular. 2. Moorish. 3. Gothic. 4. Elliptical.

ARCHES.

Another classification of architecture consists of the divisions which pertain particularly to some definite era or to some nation or people. The beginning may be assigned to prehistoric times, especially in Egypt, where the essential principles of architecture were well understood before the dawn of history. This is exemplified by the remains of vast structures, chiefly temples and monuments, built under kings of the old empire. The student may study the general subject under the following outline, which divides the architectural forms by classes into

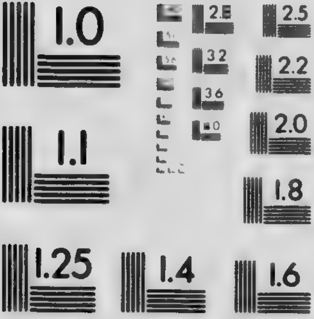
Ancient, Mediaeval, and Modern.

I. ANCIENT.
  1. Egyptian.
    A. Size—Very large.
    B. Design—Simple and substantial.
    C. Material—Plain, rough blocks of stone.
    D. Early destruction of largest buildings.
    E. Walls and pillars—Ornamented.
    F. Pyramids.
    G. Tombs.
    H. Obelisks.
    I. Temples.
    J. Palaces.
    K. Strength and durability.
    L. Religious sentiments.
    M. Symbols and hieroglyphics.
  2. Babylonian and Assyrian.
    A. Less known.
    B. Vaults and arches used.
    C. Material—Sun-dried brick, alabaster, wood, carved stone.
    D. Palaces.
    E. Temples.
      a. Stepped pyramids.



MICROCOPY RESOLUTION TEST CHART

ANSI and ISO TEST CHART No. 2



APPLIED IMAGE Inc

- b. Of great height.
- c. Externally massive.
- d. Receding stories brilliantly colored and faced with glazed tiles.

F. Style lasted from 6000 B. C. to time of Nebuchadnezzar without essential change.

3. Grecian.
   - A. Styles.
     - a. Doric.
     - b. Ionic.
     - c. Corinthian.
   - B. Most beautiful erected between 650 and 324 B. C.
   - C. Adorning—Paintings, sculpture, and magnificent coloring.
   - D. Temples.
     - a. Structure supported by massive columns.
     - b. Dedicated to patriotism.
     - c. Parthenon at Athens still remaining.
     - d. Temple at Selinus, Sicily.
   - E. Theaters—Seating capacity, 20,000.
   - F. Ruins.
     - a. Sicily.
     - b. Greece.
     - c. Asia Minor.
   - G. Decline of this class—After death of Alexander the Great.
4. Roman.
   - A. Theaters and amphitheaters.
   - B. Temples.
   - C. Bridges.
   - D. Aqueducts and sewers—Skilfully made, with use of the arch.
   - E. Baths or thermae—Suitable for use of multitudes at a time.
   - F. Triumphal arches.
   - G. Private residences and villas.
   - H. Orders.
     - a. Tuscan.
     - b. Composite.
   - I. Characteristics.
     - a. Patterned somewhat after Grecian.
     - b. Utilitarian.
     - c. Imposing and costly in appearance.
     - d. Pictorial.
     - e. Greatest perfection reached in reign of Augustus.
     - f. Decline began after death of Hadrian.
   - J Examples.
     - a. Titus Arch at Rome.
     - b. Colosseum.
     - c. Pantheon.

II. MEDIAEVAL.

1. Byzantine.
   - A. Christians permitted by Constantine to build places of worship.
   - B. Church of Saint Sophia.
     - a. At Constantinople.
     - b. Constructed by Justinian.
     - c. Has Roman arch and magnificent dome.
     - d. Later converted into Turkish mosque.
   - C. The most beautiful and valuable works destroyed with fall of Rome.
   - D. Architecture of the Normans flourished in the 13th century.
   - E. That of the Lombards in South Germany in the 8th century.

    - F. Moorish or Saracenic forms introduced into Europe in the 8th century.
    - G. Example—Alhambra, near Granada, Spain.
    - H. Characteristics.
        - a. Dome.
        - b. Gorgeous, but harmonious, color decorating.
        - c. Glass—Mosaic on gold ground.
        - d. Arches supported on columns.
- 2. Romanesque.
    - A. Came with the spread of Christianity.
        - a. Germany.
        - b. Italy.
        - c. France.
        - d. England.
        - e. Spain.
    - B. Three-aisled Christian basilica converted into a vaulted structure.
    - C. Development of the vault.
    - D. Dome, tunnel vault, cross vault.
    - E. Crypt, porch, tower, façade, ribbed groin vault.
    - F. Stone used instead of brick.
    - G. Heavy, round, or clustered piers used instead of columns, and spaced farther apart.
    - H. Appearance—Rich, heavy, and impressive.
    - I. Examples.
        - a. Church of Saint Étienne, France, founded by William the Conqueror.
        - b. Church of Michele, in Pavia, regarded the oldest in Italy.
- 3. Gothic.
    - A. A continuation of the Romanesque.
    - B. Introduced into Germany in the 8th century by Charlemagne.
    - C. Style.
        - a. Pointed arches.
        - b. Clustered pillars.
        - c. Vaulted roof.
        - d. Profusion of ornaments.
    - D. Later changes.
        - a. Windows divided into small panes.
        - b. Doorways constructed with square tops over pointed arches.
        - c. England adopted Elizabethan style in 17th century.
        - d. Italians took up Renaissance style.
    - E. Specimens.
        - a. Cathedral of Cologne, Germany.
        - b. Westminster Abbey, London.
        - c. Gothic cathedral, Amiens, France.
        - d. Cathedral of Notre Dame, Paris.

III. MODERN.

- 1. Materials.
    - A. Iron.
    - B. Steel.
    - C. Concrete.
    - D. Cement.
- 2. Classes.
    - A. Private residences.
    - B. Churches.
    - C. Business houses.
    - D. Hospitals.
    - E. Government buildings.
    - F. Elevators.
    - G. Tunnels.
    - H. Towers.
    - I. Monuments.
    - J. Railroad construction.

3. Characteristics.
    - A. An imitation of older forms.
    - B. Great height.
    - C. Close proximity.
    - D. Rapidity in construction.
    - E. Durability.
    - F. Large capacity.
    - G. Safety from fire.
4. European.
    - A. Statue of Liberty.
    - B. Eiffel Tower.
    - C. Simplon Tunnel.
    - D. Vatican, Rome.
    - E. Parliament Building, London.
    - F. Saint Peter's, Rome.
    - G. Westminster Abbey, near London.
5. American.
    - A. Washington Monument.
    - B. Capitol, Washington, D. C.
    - C. Mormon Temple, Salt Lake City.
    - D. Singer Building, New York City.
    - E. Masonic Temple, Chicago.
    - F. Union Trust Company office, Saint Louis.
    - G. Metropolitan Building, New York City.

PARLIAMENT BUILDING AT LONDON, ENGLAND.

Questions on Architecture.

By what were the characteristics of early architecture determined?

Where are the oldest remaining structures? 132.

Write a descriptive article of the tombs and pyramids of Egypt.

Which is the most noted of the ruined palaces of Persia and Assyria?

State the noted riddle of the Sphinx.

Name some of the most noted architects of Greece.

What were three styles used in Grecian architecture?

Describe the Acropolis at Athens.

Why were the baths or thermae of Rome so notable?

In the construction of what two classes were the Romans especially skillful?

What are the chief characteristics of the Byzantine style?

State some specimens of Gothic architecture.

Tell about the temple at Selinus, the Colosseum at Rome, the Cathedral of Cologne, and the Titus Arch.

What materials are now used in general construction?

State some characteristic features of modern architecture.

Name some famous types of the present European styles.

What are some of the most wonderful and finest buildings of recent design in America?

Sculpture.

Sculpture occupies a foremost position among the fine arts. The art of carving or chiseling figures from wood or stone was developed to a very high degree by the ancients. Indeed, antiquity claims a very prominent place in sculpture as well as in painting, as is witnessed by the products of ancient Egypt, Greece, and Rome.

The New Teachers' and Pupils' Cyclopaedia contains scores of articles on this and correlated subjects, but the general article on sculpture is the basis for study. It presents under subheads the processes, materials, methods, and history of the art, enabling the student to study the characteristics and development of the different schools.

Correlated Topics.

Alabaster.
Bas-Relief.
Bell.
Bronze.
Carving.
Cleopatra's Needles.
Colossus.
Gypsum.
Hieroglyphics.
Iconoclast.
Idol.
Ivory.
Laocoön.
Marble.
Niobe.
Obelisk.
Parthenon.
Pyramids.
Sphinx.
Stucco.
Terra Cotta.
Tomb.
Totemism.
Wood Carving.

Biographies of Sculptors.

Angelo.
Bartholdi.
Bernini.
Brown.
Canova.
Cellini.
Crawford.
Donatello.
Drake.
Flaxman.
Foley.
French.
Ghiberti.
Gibson.
Greenough.
Hosmer.
Houdon.
Kiss.
Kraft.
Niehaus.
Partridge.
Phidias.
Praxiteles.
Rauch.
Rinehart.
Rodin.
Rogers.
Saint Gaudens.
Schadow.
Schilling.
Siemering.
Story.
Taft.
Thorwaldsen.
Vinci.
Ward.

Outline on Sculpture.

I. Definition: Sculpture is the art of cutting or carving figures from stone, wood, metal, or some other hard substance.

II. Classes.
  1. Sculpture proper.
    A. Dimensions—Length, breadth, and height.
  2. Relief.
    A. Dimensions—Thickness or depth relatively produced.
    B. Bas-relief.
    C. Mezzo-rilievo.
    D. Alto-rilievo.

III. Materials.
  1. Marble.
  2. Stone.
  3. Ivory.
  4. Gold.
  5. Bronze.
  6. Granite.
  7. Wood.

IV. Methods.
  1. Carved in wood, etc.
  2. Cut in stone.
  3. Moulded.
    A. Work modeled first in soft clay.
    B. Supported by skeleton frame.
    C. Plaster cast then made.
    D. Copy prepared.

KISS'S AMAZON AT BERLIN, GERMANY.

        E. **Finishing touches.**
        F. **Metal cast.**
    4. Appearance.
        A. No color (as formerly) and no picturesque background.
        B. Wholly depend upon pure form.
        C. Most perfect specimens—Those truest to nature.

V. HISTORY.
    1. One of most ancient of arts.
    2. First productions.
    3. Early productions—Mythology and religion.
    4. Egyptian.
        A. Earliest forms of higher art.
        B. Represent men and industries.
        C. Large, symmetrical, stable; of calm and solemn expression.
        D. Sphinx.
        E. Value—Historically; influence upon the development of art in other countries.
    5. Assyrian.
        A. Historical and general scenes.
        B. More vigorous in spirit than Egyptian.
        C. Much inferior in idealistic beauty and trueness to nature.
        D. Period of highest development.
    6. Persian—Compare with Assyrian.
    7. Grecian.
        A. Carried sculpture to high perfection.
        B. Earliest specimens.
        C. Noted sculptors.
        D. Masterpieces.
        E. Characteristics.
    8. Roman.
        A. Attributed to Grecian artists.
        B. Transportation of treasures to Rome.
        C. Decline and advancement.
        D. Carvings of Niccola Pisano and son.
        E. Revival of art—Lorenzo Ghiberti.
        F. Leaders in the various centuries.
    9. Name leaders and masterpieces of—
        A. Germany.
        B. France.
        C. Denmark.
        D. United States.

Questions on Sculpture.

What is sculpture? Who were the earliest skilled workmen in this art? **2568.**

From what are the figures made before casting?

Explain three forms of sculpture in relief.

What materials are generally used?

State some of the disadvantages of this art compared with painting.

Describe the modern process of making a statue.

What representations did the early sculptors seek to produce?

Of what does the sculpture of China and India chiefly consist?

For what is the Egyptian art especially noted?

Sculpture is of what value to us historically?

Describe the famous Statue of Liberty.

Give a brief sketch of the life and work of Michael Angelo. **101.**

Give a list of famous Italian sculptors.

Name some of the most celebrated productions of Thorwaldsen, Dürer, Flaxman, Taft, Saint Gaudens, Bernini, and Phidias.

Mention the sculptors of the following productions: *The Fighting Gladiator, Christ the Comforter, Laocoön, Ruth, Statue of Washington,* and *The Sleeping Faun.*

Name some prominent sculptors of the United States, and at least one of their pieces.

Art in Literature.

Seraphs share with thee
Knowledge: But art, O man, is thine alone!
—*Schiller.*

A flattering painter who made it his care,
To draw men as they ought to be, not as they are.
—*Goldsmith.*

His pencil was striking, resistless, and grand;
His manners were gentle, complying, and bland;
Still born to improve us in every part,
His pencil our faces—his manners our heart.
—*Goldsmith.*

Painting is welcome!
The painting is almost the natural man;
For since dishonor traffics with man's nature,
He is but outside; these pencil'd figures are
Even such as they give out.
—*Shakespeare.*

The hand that rounded Peter's dome,
And groined the aisles of ancient Rome,
Wrought in a sad sincerity;
Himself from God he could not free;
He builded better than he knew;—
The conscious stone to beauty grew.
—*Emerson.*

Sculpture is more than painting. It is greater
To raise the dead to life than to create
Phantoms that seem to live. The most majestic
Of the three sister arts is that which builds;
The eldest of them all, to whom the others
Are but the handmaids and the servitors,
Being but imitation, not creation.
—*Longfellow.*

Engraving.

Engraving, although an ancient art, is now employed most extensively in printing on paper. Other purposes for which engravings are used include stamping for decoration, as in making seal rings and in engraving bronzes and silverware.

Engravings made for printing consist either of incised designs or of relief designs. In the former process, plates of metal, usually copper, are made and the ink is applied to the incised designs. On the other hand, in the latter process, the image is produced from the relief designs. For general information on this subject consult the following

Correlated Subjects.

Camera.
Caracci, Agostino.
Doré, Paul Gustave.
Dürer, Albrecht.
Electrotyping.
Etching.
Half-Tone.
Lithography.
Photography.
Printing.
Wood Engraving.
Zinc Etching.

Outline on Engraving.

I. ORIGIN.
  1. Egyptians.
  2. Phoenicians.
  3. Grecians.
  4. Printings from engravings common in China in the 10th century.
  5. Italians and Germans attained skill in the 13th century.
  6. Discovery made by Florentine artist.
  7. Earliest niello proof on paper (1452).
  8. Cuttings in stone, granite, cameo, metal, and armor.

II. KINDS.
  1. Wood engraving.
    A. Originated in China.
    B. Material—Hard, fine-grained wood, such as Turkish boxwood.
    C. Preparation of plate.
    D. Drawing of picture on the surface with pencil or brush.
    E. Engraver proceeds with fine steel tools.
    F. Easily duplicated by electrotype and stereotype.
  2. Lithography.
    A. Drawing or engraving made on flat lithographic stone.
    B. Process of developing impression.
    C. Zincography—From zinc plates.
    D. Chromolithography—Natural colors.
    E. Photolithography—Photographic negative transferred to stone plates. Used for maps, plans, outlines, etc.
  3. Etchings.
    A. Tools.
    B. Plates—Metallic (steel, copper).
    C. Wax, water, acid, and varnish.

- D. Processes.
  - a. Rebiting.
  - b. Line engraving.
  - c. Soft-ground.
  - d. Mezzotint.
  - e. Mixed style.
- E. Classes.
  - a. Half-tone—Magazines.
  - b. Line relief—Cheap newspaper illustrations.
  - c. Chalk plate—Small cuts and weather maps.
  - d. Intaglio engraving.
  - e. Wax—Railroad, geographical, state, county, and township maps.

4. Photography.
  - A. Its beginning.
  - B. Heliography.
  - C. Wet-plate process.
  - D. Dry-plate process.
  - E. Recent improvements.
    - (a) Color photography.
    - (b) Phototelegraphy.
    - (c) Instantaneous process.
    - (d) X-ray method.
    - (e) Astronomical photography.
    - (f) Photolithography.
    - (g) Photomicroscopy.
  - F. Methods.
    - (a) Preparation of plate.
    - (b) Exposure.
    - (c) Impression.
    - (d) Negative.
    - (e) Print-out paper.
    - (f) Toning.
  - G. Instruments.
    - (a) Camera.
    - (b) Kodak.
    - (c) Stereoscopic camera.

Questions on Engraving.

Give an account of engraving among the early Egyptians and Phoenicians.

What helpful discovery was made by Maso Finiguerra?

For what was engraving used in early times?

Why are line engravings and wood cuts going out of use?

State the value of copper in making etchings.

Describe the process of producing an etching.

For what is lithography used? What is electrotyping?

Where was the process of printing from engraving first commonly used? 923.

Of what are illustrations in daily papers usually made? Railroad maps? Weather maps?

Name the instruments used in photography.

State some recent improvements in photography. 2201.

Define half tone, graver, mezzotint, and negative.

What is the Daguerreotype process?

Music.

Music is the art of producing a succession of sounds in such combinations as to be pleasing to the ear. The sounds may be instrumental or vocal, depending upon whether they are caused by an instrument or by the human voice.

The art of music has to do with the imagination and the emotions. For this reason an agreeable succession of sounds is pleasing to the layman who understands few, if any, of the technical terms employed by musicians. However, the pleasure of listening to musical productions is greatly increased by a critical understanding of the technique by which harmonious results are obtained.

The New Teachers' and Pupils' Cyclopaedia affords much pleasure to those who wish references in music and musical terms. Besides the general article entitled Music, the student will find ample information to enable him to speak and write authoritatively on this subject. This is true both of the technique of music itself as well as of musical terms, the history of music, and the lives of great musicians.

Outline for Study.

I. Definitions.

Standard or concert pitch.
Diatonic scale.
Octave.
Keynote or keytone.
Pitch.
Staff degrees.
Clef.
Musical staff.
Key signatures.
Key signs.
Sharps.
Flats.
Leger lines.
Modulation.
Concordat.
Chord.
Notes and rests.
Melody and harmony.

II. Divisions.

Melodics, rythmics, dynamics.

III. Musical Instruments.

Accordion.
Aeolian harp.
Bagpipe.
Banjo.
Bugle.
Calliope.
Chime.
Clarinet.
Concertina.
Cornet.
Cymbals.
Drum.
Dulcimer.
Fife.
Flageolet.
Flute.
Guitar.
Harmonica.
Harp.
Horn.
Jew's harp.
Lute.
Lyre.
Mandolin.
Ocarina.
Organ.
Pianoforte.
Saxhorn.
Tambourine.
Trombone.
Trumpet.
Viol.
Violin.
Violoncello.
Xylophone.
Zither.

IV. Musical Terms and Forms.

Bard.
Cantata.
Choir.
Chord.
Chorus.
Chromatic.
Conservatory.
Festival.
Guild.
Harmonics.
Hymnology.
Instrumental music.
Melody.
National Hymn.
Opera.
Oratorio.
Orchestra.
Psalms.
Quartette.
Recitative.
Reed.
Rhyme.
Singing.
Sonnet.
Sound.
Tone.
Trio.
Voice.

V. Biographies of Musicians.

Abt.
Auber.
Bach.
Balfe.
Barnby.
Beethoven.
Berlioz.
Brahms.
Bull.
Chopin.
Corelli.
Dvorók.
Flotow.
Gluck.
Gounod.
Handel.
Haydn.
Kubelik.
Lind.
Liszt.
Mendelssohn.
Meyerbeer.
Mozart.
Nordica.
Offenbach.
Paderewski.
Palestrina.
Patti.
Rossini.
Rubinstein.
Saint-Saens.
Schubert.
Schumann.
Sousa.
Strauss.
Sullivan.
Thomas.
Verdi.
Wagner.
Weber.

Test Questions in Music.

How does music rank among the fine arts?

By what is attested the popularity of music in ancient times?

Who were the earliest noted composers?

Define staff, melody, octave, opera, duet, chord, and crescendo.

Name six musical instruments in common use.

Distinguish between a choir and a chorus.

By whom was the aeolian harp invented? 26.

State some references to music found in the Bible.

Recite three quotations from literature in reference to music.

Name the authors of the following: *Home, Sweet Home, Star Spangled Banner, America, The Messiah,* and *Requiem.*

What composer is noted for the ease and dignity with which he wrote?

Name some of the best works of Schubert, Beethoven, Verdi, Mendelssohn.

Give a list of six noted singers. Of six composers.

Explain how a nation's character may be judged by the standard of its music.

Name a celebrated band leader. A leader of orchestras.

Give a brief sketch of the life of "The Swedish Nightingale." 1596.

For what is Frances Crosby noted? What peculiar disadvantage did she have?

Music in Literature.

Song forbids victorious deeds to die.
—*Schiller.*

Music should strike fire from the heart of man, and bring tears from the eyes of woman.
—*Beethoven.*

How sweet the moonlight sleeps upon this bank!
Here will we sit, and let the sounds of music
Creep in our ears: soft stillness, and the night,
Become the touches of sweet harmony.
—*Shakespeare.*

And the night shall be filled with music,
And the cares that infest the day
Shall fold their tents like the Arabs,
And silently steal away.
—*Longfellow.*

At every close she made, th' attending throng
Replied, and bore the burden of the song:
So just, so small, yet in so sweet a note,
It seem'd the music melted in the throat.
—*Dryden.*

Is there a heart that music cannot melt?
Alas! how is that rugged heart forlorn!
Is there, who ne'er those mystic transports felt
Of solitude and melancholy born?
—*Beattie.*

Orpheus could lead the savage race,
And trees uprooted left their place,
Sequacious of the lyre;
But bright Cecilia raised the wonder higher;
When her organ vocal breath was given
An angel heard,
And straight appeared,
Mistaking earth for heaven.
—*Dryden.*

Dictionary of Musical Terms.

Accelerando, Quicken the movement.

Accidentals, Sharps, flats, and naturals, introduced in a piece.

Accompaniment, The harmony; all the parts except the one carrying the melody.

Adagio, Quite slow.

Ad Libitum, or *ad lib.*, At will.

Affettuoso, Affectionately, tenderly.

Agitato, Anxiously, an agitated manner.

Allegretto, Briskly, but not as quick as allegro.

Allegro, Quick.

Al Segno, To the sign (Repeat from the sign :S: to the word *Fine*).

Andante, Somewhat slow and sedate.

Andantino, Not quite as slow as *andante*.

Animato; **Animoso**, In a spirited manner.

Appoggiaturas, Notes of embellishment written in small characters.

Aria, An air or song.

Arpeggio, The notes of a chord when played successively.

Assai, Very, extremely.

A tempo, In the regular time.

Barcarolle, A Venetian boat song; applied to a light, graceful composition in 6/8 measure.

Ben, Well; as *Ben Marcato*, well marked.

Brillante, Showy and sparkling.

Brio; **Brioso**, With brilliancy and spirit.

Cantibile, In a graceful, singing style.

Capriccio, Fanciful and irregular composition.

Cavatina, An air of one movement or part.

Chord, Several notes struck simultaneously.

Chromatic, Formed of semitones.

Coda, A few bars added as a close to a composition.

Con, With.

Copula; **Coupler**, A mechanical stop in an organ by which two rows of keys are connected.

Crescendo, *cres.*, or <, Gradually increase the volume of tone.

De Capo, or D. C., Repeat from beginning to the word *Fine*.

Decrescendo, *decres.*, >, Gradually diminish the volume of tone.

Delicato, Delicately.

Diatonic, Naturally, according to the degrees of the major or minor scale.

Diminuendo, or *dim.*, Gradually diminish the volume of tone.

Dolce, Sweet and soft.

Dolcissimo, As sweetly as possible.

Dolore; **Doloroso**, Soft, sweet, and beautiful.

Duet, A composition for two voices; in two parts.

E., And.

Elegante, Gracefully, elegantly.

Espressivo; **Con Espressione**, With expression.

Extempore, Unpremeditatedly.

Fantasie; **Fantasia**, An irregular kind of composition, in which the rules are to a certain extent disregarded.

Finale, The last movement or part of an extended composition.

Fine. The end.

Forte, or f., Loud.

Fortissimo, or ff., Very loud.

Forzandoor, fz., or >, Sudden emphasis or force.

Fuoco, With fire.

Furioso, Furiously.

Giusto, In exact time.

Grave, Slowest degree of movement; extremely slow.

Grazioso, In a graceful, elegant style.

Idylle, A name given to graceful compositions in a romantic style.

I., **II.**, The.

Impromptu, An extemporaneous production.

Interlude, A short strain, usually of 4/8 measure, occurring between the verses of a hymn or psalm.

Interval, Difference in pitch of two notes.

Larghetto, Slow and solemn, but less so than *largo*.

Largo, Very slow and solemn.

Legato, Smooth and connected.

Lentando, Gradually retard or slacken the time.

Lento, In slow time.

L. H., Left hand.

Loco, Play the notes where written. The mark occurs after an 8va.

Lugubre, Mournfully, sadly.
M., See *Mezzo.*
Ma, But.
Maestoso, Majestic and dignified.
Main, Hand; M. G., Right hand; M. D., left hand.
Manual; **Manuale**, The keyboard in contradistinction to the pedals.
Marcato, Marked and emphatic.
Marche; **Marcia**, A march.
Marche Funebre, A funeral march.
Meno, Less.
Menuet; **Minuet**, A graceful movement in 3/4 measure.
Mezzo, or M., Medium or moderate; Mf., rather loud; Mp., rather soft.
Moderato, Neither slow nor quick; moderate.
Molto, Very; extremely.
Mosso, Rapid (Pin mosso, more rapid; neno mosso, less rapid).
Moto, or *Con Moto,* With agitation and earnestness.
Nocturne; **Nocturno**, Night Song. A name given to light and elegant compositions.
Non Troppo, Not too much.
Pastorale, A soft and rural movement in 6/8 measure.
Pathetico, Pathetically.
Piano, or *p.*, Soft.
Pianissimo, or *pp.*, Very soft.
Più, An adverb of augmentation, as *più presto*, quicker; *più piano,* softer.
Poco, A little, somewhat.
Prelude, A short introductory performance.
Prestissimo, As fast as possible.
Presto, Very quick indeed.
Quartet, A composition for four voices, or in four parts.
Quasi, As if, in the manner or style of.
Quintet, A composition for five voices, or in five parts.
Rallentando, or *Rall.*, Gradually retard the time and diminish the volume of tone.
Religioso, In a solemn style.
Reverie, A graceful composition in a free style.
R. H., Right hand.
Ritardando, *Ritard*, or Rit., Gradually slower.
Romance; **Romanza**, A simple and elegant melody.
Scherzo, A cheerful and humorous composition in quiet time.
Semplice, In a simple way; unaffected style.
Sempre, Throughout, always.
Senza, Without.
Sforzando, or *sfz.*, With sudden emphasis.
Slentando, Gradually retard the time, lentando.
Sostenuto, Sustained, smooth, and connected.
Spirito, or *Con Spirito,* With spirit.
Staccato, Short and detached.
Stringendo, Gradually quicken the time.
Suspension, Holding a note or chord after the next chord is struck.
Swell, or <>, Increase the volume of tone and then diminish it.
Tempo, Time.
Theme, A subject.
Tranquillo, In a tranquil manner; quiet.
Trio, A composition for three voices or parts.
Valse, A waltz.
Vigoroso, Boldly, vigorously.
Vivace, With extreme briskness and animation.
Vivo, Animated, lively.

Evening Bells.

Those evening bells, those evening bells!
How many tales their music tells,
Of youth, and home, and that sweet time
When last I heard their soothing chime!

Those joyous hours have passed away,
And many a heart that then was gay,
Within the tomb now darkly dwells,
And hears no more those evening bells!

And thus 'twill be when I am gone,
That tuneful peal shall still ring on,
And other bards shall walk these dells,
And sing thy praise sweet evening bells!

—*Moore.*

Painting.

Painting is a decorative art. It requires skill in the selection of colors as well as in the process of applying them to surfaces. The painter needs to go to nature for inspiration, to study objects and landscapes, as a means of making reproductions that are true to life.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA treats the general subject of painting in a special article, but in addition to this are presented many relevant topics. The whole treatment affords a prolific source of information, not only on paintings, but on painters and their life and achievements.

Painting is a prolific field for the study of the beautiful. No home or public institution is cheerful without adornments from the hand of the painter. A few well-selected paintings from the great masters, a collection of the works of art, inspire home life with grand ambitions and lofty purposes. They quicken the imagination, sweeten the ties of friendship, and add luster to literature.

Correlated Subjects.

Art.
Canvas.
Ceramic Art.
Color.
Distemper.
Drawing.
Enamel.
Encaustic Painting.
Fresco.
Glass.
Landscape.
Mosaic.
Mummy.
Ochre.
Oil.
Paints.
Perspective.
Pottery.
Vase.
Water Colors.

Biographies of Painters.

Angelo.
Bartolommeo.
Bonheur.
Burne-Jones.
Caracci.
Cimabue.
Correggio.
Delaroche.
Dürer.
Eyck.
Giorgione.
Guido Reni.
Hals.
Holbein.
Inness.
Kaulbach.
Landseer.
Leutze.
Luini.
Memling.
Menzel.
Millais.
Millet.
Murillo.
Perugino.
Raffaelli.
Raphael.
Rembrandt.
Reynolds.
Rossetti.
Rubens.
Ruysdael.
Sarto.
Tintoretto.
Titian.
Vedder.
Vereshchagin.
Vernet.
Vinci.
West.
Whistler.
Wilkie.
Wyant.
Zeuxis.

Outline on Painting.

I. DEFINITION: Painting is the art of adorning surfaces with paints and colors.
  1. Aim.
  2. Mastery of the art.
    A. Knowledge of:
      a. Form.
      b. Design.
      c. Perspective.
      d. Color.
      e. Light.
      f. Shade.

II. GENERAL METHODS.
  1. Drawing.
    A. Pencil.
    B. Crayon.
    C. Charcoal.
    D. Pastel.
    E. Water color.
  2. Oil painting.
    A. Canvas.
    B. Panel.

3. Mural.
    A. Fresco.
    B. Distemper.
    C. Encaustic.
4. Others.
    A. Porcelain.
    B. Vase.
    C. Glass.
    D. Terra cotta.
    E. Enamel.

III. VARIETIES.
1. Decorative.
2. Portrait.
3. Landscape.
4. Marine.
5. Historical.
6. Genre.
7. Fruit and flowers.
8. Battle.
9. Architecture.
10. Miniature.

MINIATURE OF WILLARD'S SPIRIT OF '76.

IV. HISTORY.
1. Comes from remote antiquity.
2. Painted decorations in temples at Thebes.
3. Mentioned by prophet Ezekiel.
4. Use.
    A. Decorations.
        a. Tombs.
        b. Temples.
        c. Mummy cases.
        d. Public buildings.
        e. Rolls of papyrus.
5. Greece—Most highly developed in painting.
    A. Schools.
    B. Noted scholars.
6. Rome—Introduced from Corinth about 650 B. C.
7. Italian—Developed about 1204.

> Cannon to right of them,
> Cannon to left of them,
> Cannon in front of them,
> Volleyed and thundered.
> * * * *
> Flashed all their sabers bare,
> Flashed as they turned in air,
> Sabering the gunners there,
> Charging an army.
> * * * *
> When can their glory fade?
> O the wild charge they made!
> All the world wondered.
> —*Tennyson.*

V. OIL PAINTINGS.
1. Introduced in 15th century.
2. Brought forward masters.
3. Developments.
    A. Better expression.
    B. Depth of color.
    C. Richness in effect.
    D. Inventive genius.
    E. Elegance in color.
    F. Individuality in character.

VI. GENERAL DEVELOPMENTS.
1. Deep shadows and enlargement upon indoor effects—Leonardo da Vinci.
2. Extreme contrasts of light and shade—Rembrandt.
3. Brilliancy and transparency of coloring—Jan Van Eyck.
4. Grandeur of design—Michael Angelo.
5. Elevated landscape painting—Guido.

VII. TWELVE GREAT PAINTINGS.

1.	*The Last Supper*	Da Vinci.
2.	*Beatrice Cenci*	Guido Reni.
3.	*The Assumption of the Virgin*	Titian.
4.	*Sistine Madonna*	Raphael.
5.	*The Transfiguration*	Raphael.
6.	*The Holy Night*	Correggio.
7.	*The Last Judgment*	Michael Angelo.
8.	*The Descent from the Cross*	Volterra.
9.	*The Communion of Saint Gerome.*	Domenichino.
10.	*The Immaculate Conception*	Murillo.
11.	*Aurora*	Guido Reni.
12.	*The Descent from the Cross*	Rubens.

Questions on Painting.

As a fine art, what is the aim of painting? 2080.

The knowledge of what subjects is involved in painting?

By what prophet is this art mentioned?

Upon what materials were paintings made in early days? Upon what now?

State a half dozen varieties of paintings.

What are art galleries? Locate a number of noted art galleries.

Name the special developments due to Vinci, Jan Van Eyck, and Guido.

In what respect did Michael Angelo surpass other artists of his time?

The ancient Egyptian paintings are of what value to us?

Tell how painting, sculpture, and religion are related.

Mention the leading works of Rubens and Menzel.

For what is fresco work especially useful?

Name the twelve great paintings of the world.

For what special lines of work are Landseer, Bonheur, and Rapuael noted?

Mention the painters of the following: *The Angelus, Aurora, The Horse Fair,* and *The Shepherd's Chief Mourner.*

Name some of America's best painters and their works.

Correggio's The Holy Night.

The following Christmas carol, translated from the German by Bernhart P. Holst, interprets this picture:

Silent night, Holy night!
All repose,—halo light
Shines on the loving parental pair,
Who in the stall at Bethlehem are
By the heavenly Child,
By the heavenly Child.

Silent night, Holy night!
Shepherds see star most bright,
Angels singing halleluiah,
Bringing glad tidings from heav'n afar,
Christ, the Savior, is born,
Christ, the Savior, is born.

Silent night, Holy night!
Son of God, love's pure light,
O'erwhelms us, a redeeming power,
When we're strik'n by the saving hour,
Jesus Christ, through Thy birth,
Jesus Christ, through Thy birth.

Silent night, Holy night!
Earth, awaken at the sight,—
Let every creature bend the knee,
Let all proclaim the jubilee,
Peace on earth forever,
Peace on earth forever.

Study of Painters and Paintings.

Sanzio Raphael.

"The perfect artist, the perfect man."

Sanzio Raphael, a celebrated Italian painter, was born at Urbino, Italy, on April 6, 1483. His death occurred on his thirty-seventh birthday, April 6, 1520, from a fever contracted while he was conducting some excavations at Rome. His premature death caused much mourning, and he was interred with great honors in the Pantheon.

THE SISTINE MADONNA.

The birthplace of Raphael is an interesting mountain town, directly east of Florence. It is in a section noted for its beautiful scenery, such as, later, Raphael loved to paint as a background for many of his most beautiful Madonnas.

The inhabitants, shut in as they were from the outside world, led simple and religious lives. His parents were deeply religious and their entire thought was how they could best rear the little son of whom they were so proud.

The father of Raphael was a painter and allowed him to assist about the studio When Raphael was eight years old, the mother died, leaving the father to care for the child. In a short time a stepmother was brought home. Fortunately, she was a kind woman and could not have loved and cared more for the lad had he been her own. When the father died, she and his uncle managed his affairs with the greatest care.

The most noted of all the Umbrian painters at this time was a peculiar little man named Perugino—a man with unusual ability in painting Madonnas. To this painter Raphael was sent. It is said that, when the artist examined the lad's work, he exclaimed, "Let him be my pupil; he will soon become my master."

In this studio he remained many years, but the dream of his life, a chance to view the treasures of Florence, the art center of Italy, was not realized until in 1505. His first visit in Florence was short, but during the second visit he painted many of his best known pictures. He was most successful in his paintings of the child Jesus and the beautiful mother.

Some of his best known pictures are the *Sistine Madonna, Madonna of the Goldfinch, Madonna of the Meadow, Madonna of the Garden, Madonna Della Sedia,* and *Madonna Saint Cecilia.* All of these are finished in soft exquisite coloring. Indeed, Raphael has been considered one of the greatest colorists the world of art has ever known.

He was given a commission by the Pope to paint in fresco three large rooms of the Vatican and to decorate the corridor leading to these rooms. In this corridor are the paintings known as Raphael's Bible of the Fifty-two Pictures; forty-eight of these paintings represent Old Testament scenes and four are from the New Testament.

Death claimed the great artist at the age of thirty-seven years, before he had completed *The Transfiguration*, which was finished by his pupils.

The Sistine Madonna.

The Sistine Madonna, considered by many as Raphael's greatest picture as well as one of the most famous of the world's paintings, now occupies a room by itself in the Dresden Picture Gallery, in Dresden, Germany. It was painted originally as a banner for the monks of Saint Sixtus, but was afterward used as an altarpiece, and was purchased in 1753 by the Elector of Saxony for the Dresden gallery. The picture is really a canvas panel over eight feet long and nearly six and a half feet wide.

This work of art, as we usually see it, is always beautiful, yet we can hardly form any idea of its real beauty until we see it in the original colorings. The shades are so exquisitely blended and the expressions on the faces are so pure and ethereal that one hesitates in attempting a description.

In looking at the picture we can almost fancy we are looking out through a window across which are draped curtains of a rich green hue.

As we look through this window we seem to catch a glimpse of heaven; faintly through the background is seen a cloud of countless cherubs. Out of this cloud appear the Madonna and the Child as though taking their way to earth. The figures on either side represent Saint Sixtus and Saint Barbara. Saint Sixtus looks earnestly into their faces while Saint Barbara occupies a position of deep devotion as though waiting for them to pass by.

Underneath is a ledge upon which lean two beautiful boy angels, the final touch of love. The picture was completed without these cherubs, which were afterward added when Raphael found two small lads leaning on a parapet and gazing with intense earnestness on the beautiful picture. This famous Madonna was the last picture painted wholly by Raphael.

Study of the Picture. Looking at the picture as a whole and thinking only of the trend of the lines, what figure do they form? Studying it in detail we find it to be a combination of pyramids. What is the size of the original picture? Upon what was it painted? Where is the picture? Write a description of it as it looks to you. Compare the mother's expression with the expression on the face of the child. Which do you consider the more beautiful and why? The study of Raphael's life forms a basis for excellent language and composition work. Write a composition, using the following outline as a basis:

I. Describe the boy Raphael.
  a. Appearance.
  b. **Disposition.**
II. Raphael's home and early life.
III. His paintings.
IV. His later home and last days.

Whittier's Tribute to Raphael.

The tissue of the Life to be
We weave with colors all our own,
And in the field of Destiny
We reap as we have sown.

Still that the soul around it call
The shadows which it gathered here,
And, painted on the eternal wall,
The Past shall reappear.

Think ye the notes of holy song
On Milton's tuneful ear have died?
Think ye that Raphael's angel throng
Has vanished from his side?

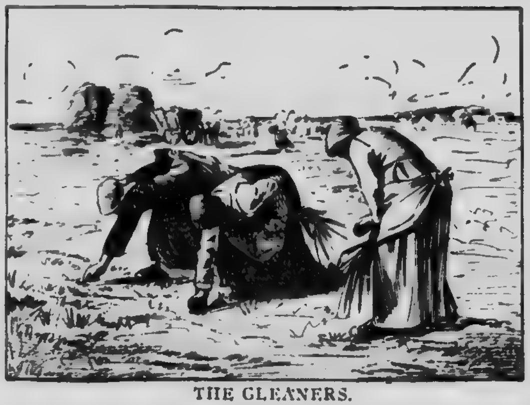
O no! We live our life again;
Or warmly touched, or coldly dim,
The pictures of the past remain,—
Man's works shall follow him!

—*J. G. Whittier.*

Jean François Millet.

Jean François Millet, the celebrated French artist, was born at **Gruchy**, Normandy, Oct. 4, 1814.

This part of France is noted for its hardy race of peasants, some of them bold fishermen, others thrifty farmers. He was the second of eight children and was brought up to do the hardest of outdoor work. Although he afterward became one of the world's most celebrated artists, yet he always remained at heart a good peasant.



THE GLEANERS.

The people of his vicinity were intensely religious and all their interests centered around the church. The Millet family lived quite a distance from their beloved church, yet the associations were very dear to them all, and, when in after years Millet brought his own family back to spend a long summer holiday, he was able to make many sketches of the old familiar scenes which furnished materials for some of his best known pictures.

The boy inherited some of his artistic tastes from his father, who was precentor of the parish church, and also conducted the village choir for many years. His mother belonged to a family of rich farmers who were looked upon as belonging to the gentle folk.

As a child Millet was fond of reading, having shown a passion for the Bible. Indeed, it has been said that an old illustrated Bible first inspired him with the idea of expressing himself in art. Quite early he showed marked signs of great artistic ability and loved to draw and paint men and women as he saw them under the burden of heavy toil. When the father recognized his son's ability, he sent him to Cherbourg to study. Though he received fairly good instruction here, and later in Paris, yet his greatest teacher was Nature, and he was delighted to get to Barbizon, where he could study and work out the peasant life which he so much loved.

In appearance he was a large, fine-looking man, with a countenance which bore the stamp of the thinker and scholar as well as artist. He was a man who had few intimate friends, a man who lived in a world of his own, yet the few people who were permitted to know him well loved him sincerely. He was twice married and always much attached to his home and home people.

It has been said that among all his paintings *Feeding Her Birds* was his favorite, for when he worked in his garden his children were always hopping about him like birds, and that this is really a picture of his own home and garden.

The *Angelus* is probably the best known of all his pictures. It represents an early twilight of an autumn day. The two peasants who have been working later than usual, in order to fill another sack with potatoes, are suddenly reminded of the hour of prayer by the ringing of the *Angelus*. An atmosphere of prayer pervades the entire picture.

The patron for whom this picture was intended was very disappointed with it and for a time Millet found difficulty in disposing of it. In 1889 it was purchased by an American and carried on an exhibition tour through most of the large cities of Canada and the United States. It is now in the collection of M. Chauchard in France; the canvas is somewhat cracked and the colors have grown darker.

The hour after sunset is sometimes called the hour of *Ave Maria*—

Ave Maria! blessed be the hour!
The time, the clime, the spot, where I so oft
Have felt that moment in its fullest power
Sink o'er the earth so beautiful and soft,
While swung the deep bell in the distant tower,
Or the faint dying day-hymn stole aloft,
And not a breath crept through the rosy air,
And yet the forest leaves seemed stirred with prayer.

—*Byron.*

The Sower, another of Millet's famous pictures, was exhibited at the Salon in 1850.

The Song of the Sower.

Brethren, the sower's task is done,
The seed is in its winter bed.
Now let the dark-brown mould be spread,
To hide it from the sun,
And leave it to the kindly care
Of the still earth and brooding air,
As when a mother, from her breast
Lays the hushed babe apart to rest,
And shades its eyes, and waits to see
How sweet its waking smile will be.
The tempest now may smite, the sleet
All night on the drowned furrow beat,
And winds, that from the cloudy hold
Of winter breathe the bitter cold,
Stiffen to stone the yellow mould,
Yet safe shall lie the wheat;
Till out of heaven's unmeasured blue
Shall walk again the genial year,
To wake with warmth and nurse with dew
The germs we lay to slumber here.

—*Bryant.*

The Gleaners.

THE PICTURE. In this picture of Millet's we get a glimpse of a harvest field on a large farm. The wheat has been gathered and carried by wagons to a place where it is stacked in great mounds. After all this has been done, the gleaners are permitted to come into the fields and gather what is left. This is an old, old custom and dates back to the earliest times. It is still observed in France, although gleaning is allowed only in daylight. The time of the picture is probably noon of a summer day, when the sun is high in the heavens.

The gleaners are three women of the peasant class, neatly dressed in coarse working clothes, representing the three ages of womanhood—a maid, a matron, and an aged woman.

Millet's unusual ability to see and portray light and shade is well brought out in this picture, as well as his love and sympathy for the French peasantry.

The painting was first exhibited at the Salon in 1876. In 1889 it was purchased by Madam Pommeroy for 300,000 francs and given to the Louvre, Paris.

Test Questions.

What is the picture called and why?

In what country is the practice of gleaning still carried on?

What are some of the old laws regarding it? (Read Lev. xxiii., 22; Deut. xxiv., 19).

What is the probable time of day? Give a reason for your opinion.

How many people do you see in the foreground? Describe each one and tell what they are doing.

Describe the scene in the distance.

Why are the gleaners only allowed in the field in daylight?

Teach the lesson of the dignity of toil.

Sublimer in this world know I nothing than a peasant saint, could such a one now anywhere be met with. Such a one will take thee back to Nazareth itself; thou wilt see the splendor of heaven spring forth from the humblest depths of earth like a light shining in great darkness. —*Thomas Carlyle.*

The Man with the Hoe has probably caused more discussion than any of Millet's pictures. Many people have thought that it was the artist's intention to set forth the degrading effects of work, but this is not true. He simply painted life as he had seen it and lived it.

The Man with the Hoe.

Written after seeing Millet's World-Famous Picture.

Bowed by the weight of centuries he leans
Upon his hoe and gazes on the ground,
The emptiness of ages in his face,
And on his back the burden of the world.
Who made him dead to rapture and despair,
A thing that grieves not and that never hopes,
Stolid and stunned, a brother to the ox?
Who loosened and let down this brutal jaw?
Whose was the hand that slanted back this brow?
Whose breath blew out the light within this brain?
Is this the Thing the Lord God made and gave
To have dominion over sea and land;
To trace the stars and search the heavens for power;
To feel the passion of Eternity?
Is this the Dream He dreamed who shaped the suns
And pillared the blue firmament with light?
Down all the stretch of Hell to its last gulf
There is no shape more terrible than this—
More tongued with censure of the world's blind greed--
More filled with signs and portents for the soul—
More fraught with menace to the universe.

What gulfs between him and the seraphim!
Slave of the wheel of labor, what to him

Are Plato and the swing of Pleiades?
What the long reaches of the peaks of song,
The rift of dawn, the reddening of the rose?
Through this dread shape the suffering ages look;
Time's tragedy is in that aching stoop;
Through this dread shape humanity betrayed,
Plundered, profaned and dis-in-herited,
Cries protest to the Judges of the World,
A protest that is also prophecy.

O masters, lords and rulers in all lands,
Is this the handiwork you give to God,
This monstrous thing distorted and soul-quenched?
How will you ever straighten up this shape;
Touch it again with immortality;
Give back the upward looking and the light;
Rebuild in it the music and the dream;
Make right the immemorial infamies,
Perfidious wrongs, immedicable woes?

O masters, lords and rulers in all lands,
How will the Future reckon with this Man?
How answer his brute question in that hour
When whirlwinds of rebellion shake the world?
How long will it be with kingdoms and with kings—
With those who shaped him to the thing he is—
When this dumb Terror shall reply to God,
After the silence of the centuries?

—Edwin Markham.

The Angelus.

Against the sunset glow they stand,
Two humblest toilers of the land,
Rugged of speech and rough of hand,
Bowed down by tillage.

O lowly pair! you dream it not
Yet on your hard unlovely lot
That evening gleam of light has shot
A glorious passage;
For prophets oft have yearned and kings
Have yearned in vain to know the things
Which to your simple spirits brings
That curfew message.

Enough for us
The two lone figures bending thus,
For whom that far off Angelus
Speaks Hope and Heaven.

—Lord Houghton.

Some other well-known pictures are:

"The Shepherdess," "The Gleaners," "Potato Planters," "Filling the Water Bottles," "The Church at Greville," and many others, all representing peasant life.

Jean François Millet has been called the "Dante of peasants and the Michael Angelo of rustic art." His death occurred in Barbizon, France, in 1875.

Rosa Bonheur.

THE HORSE FAIR.

The life of Rosa Bonheur is one of the most interesting of all artists, including as it does years of poverty and struggle, and later years of fame and all the luxuries wealth can procure. To-day her name is loved and honored by the whole world, especially by the children, with whom she probably stands as first choice among artists.

Much of this fame of Rosa Bonheur is due to the careful training she received from her father, who was a teacher as well as an artist. As an instructor he possessed great ability, and his methods of instruction were far in advance of the times in which he lived.

Among his earlier pupils was a beautiful musician with whom he fell in love and afterward married. They made their early home in the quaint old town of Bordeaux, on the west coast of France. Here, on March 22, 1822, was born the subject of this sketch. Her early years were spent in perfect freedom with her pets and animals as her playful companions. She dearly loved to follow them about and early became a close observer of the outside world, through these observations enjoying much that an ordinary child would have considered dull and uninteresting.

Bordeaux was a commercial city with almost no opportunities for one of artistic tastes, so the Bonheurs were easily prevailed upon to remove to Paris. Their change occurred just at the breaking out of the Revolution, a most unfortunate time for the father to gain the patronage he so much needed. But only a short period elapsed before pupils were attracted to him and he was engaged to make illustrations for a scientist who was getting out a work on natural history.

Upon the death of the mother, in 1835, the father was left alone to care for the family of children. Thoroughly impractical and crushed with sorrow over the loss of his beloved wife, he saw no better way to care for his children than to separate them. A kind friend took the youngest child, the two boys were sent to a boarding school, and Rosa was placed in another. School life was not to her liking. She was fond of all out-of-door sports and so exceedingly careless in her dress that she was often the subject of ridicule. She paid very little attention to books; about the only pleasure she derived from them was to scribble them full of pictures, sketches of animals, and funny pictures of teachers and friends. She made no attempt to gain the good will of her instructors and, as she was the instigator of many of the pranks of the school, one can easily see that the impression made was far from a favorable one. The little girl was next sent to a Madame Gaindorf to learn to sew, and in this, too, she was a failure.

Then an artist friend of her father's took her and, giving her brush and colors, she allowed her to assist in the studio. For the work she was paid a few cents. At last, the father, not knowing what to do, took her into his own studio. He was busy with his work and could give her almost no attention, yet she was perfectly happy and contented, amusing herself with paints and colors.

Her first work of any value was a bunch of cherries, which was so cleverly drawn that her father resolved from that time on she should have careful training. She soon made such rapid progress in her work that she began copying the great pictures in the Louvre. This work she did so well that her copies brought good prices and she was able to aid her father in caring for his family. This copying gave her the highest training, which she afterwards fully appreciated; concerning it she said: "I cannot repeat sufficiently to young beginners who wish to adopt the hard life of the artist, to do as I have done: stock their brains with studies after the old masters. It is the real grammar of art, and time thus employed will be profitable to the end of their careers."

She spent many years in studying the anatomy of animals until she understood it as thoroughly as a physician knows the structure of the human body. In order to perfect herself along this line, she spent much time visiting the slaughterhouses of Paris. Knowing animals so thoroughly enabled her to sketch quickly, and it was in this power to draw rapidly and accurately that she excelled.

Her first picture to be exhibited in the Salon was a study of rabbits, drawn from life. In 1847 she took her first prize, a gold medal of the third class; in 1850 she was successful in gaining the first prize.

To no one did these honors mean so much as to the aged father, who had watched her progress with fond hopes for her highest success. His last years had been easier, for he had been given an appointment in a young ladies' drawing school, but his health began to fail while she was engaged on the picture *Oxen Ploughing*, which afterward brought her much fame. When it was finished, he summoned strength enough to go and see it. The success of this picture seemed to be the crowning glory of his life and he lived but a short time after this.

Upon the death of her father, she was given his position and carried on his work until her departure for By, which was afterward her home. This new home was very near Fontainbleau Palace, which was the favorite residence of Napoleon III. and the Empress Eugénie. She soon became a great favorite of the Empress and it was through her influence that the badge of the Legion of Honor was bestowed upon her. In after years she received many honors, coming from many countries, but the one that most delighted her was the one conferred by President Carnot, in 1893, which made her an Officer in the Legion of Honor. This last honor should be especially interesting to Americans, as it was bestowed on account of the work sent to the World's Columbian Exposition at Chicago.

For many years she made a study of animals; lions and tigers, the stronger animals, appealing most to her. The lions she used as models became great pets and seemed to know and love her. During one of her absences, one of her pets, Nero, was sent from home that he might be better cared for. He grieved for his friend and refused to be comforted. When she returned she found him ill and in a few days he died with his head on her arm.

This beloved artist, whose hair had been whitened by much sorrow, whose countenance always wore the same sweet and placid expression, died at By, May 25, 1899, at the age of 77 years.

The Horse Fair.

Rosa Bonheur's picture *Oxen Ploughing* proved such a success that she was fired with a desire and ambition to do something much greater and better. With this thought in mind she planned the *Horse Fair.* In order to do this well she made a careful study of horses, visiting horse fairs and markets, in spite of the fact that her friends had placed at her disposal their finest horses.

To get about easily she adopted male attire, which she found so very convenient that she afterward used it when at work.

As the horses were to be two-thirds life size, the canvas required was an immense one and it was necessary for her to use a ladder much of the time in working. The completed picture was exhibited in the Salon in 1853.

On account of the merit and great ability displayed in this work, the artist was allowed the privilege of exhibiting in the Salon without examination.

The *Horse Fair* was afterward loaned for an exhibition in Ghent. The Belgians were not only delighted with the picture, but were so pleased with the artist's generosity that they sent her a cameo reproduction of the picture in miniature.

At the close of the exhibition, she was offered 40,000 francs for it. She accepted the proposition and the picture was on exhibition first in England, then in America.

It was finally bought by a wealthy American for 300,000 francs and is now in the Metropolitan Museum of Art, New York City.

Questions on The Horse Fair.

> A beautiful picture is a silent teacher.
> —*Selected.*

What special preparation did Rosa Bonheur make for the production of this picture?

What costume did she adopt and why?

How many horses can you count? How many men? How large are the horses?

Describe one horse which you consider more beautiful than the others.

Where and when was this picture first exhibited? How was it received?

In what place was it afterward exhibited?

When the artist sold the picture, how much did she receive for it?

Who finally bought the picture and how much did he pay for it?

Where does it now hang?

Describe the picture as a whole.

LETTER WRITING

Letters are intended as resemblances of conversation, and the chief excellencies of conversation are good humor and good breeding.

—*Walsh.*

DEFINITION. A letter is a written communication from one person to another. Letters may be either private or public. Private letters embrace *Letters of Courtesy, Letters of Friendship,* and *Letters of Business.* Public letters include *news letters* intended for publication and *essays* and *reports* addressed to some person or persons.

HISTORICAL. Letter writing in some form has been employed since the earliest ages. Messages of all kinds have been inscribed on every available substance—on stones, on skins of animals, on leaves of plants, and on tablets of clay. Many savages used the bark of trees for challenges of war or messages of good will.

Letter writing as now used is a form of composition and is more frequently employed than any other class of writing. For this reason its importance cannot be overestimated.

DIVISIONS OF A LETTER.

a. Heading.
b. Introduction.
c. Body of the letter.
d. Conclusion.
e. Superscription.

The subject-matter is by far the most important part of the letter, yet there are certain usages which are absolutely essential to successful letter writing. While these well-established principles may seem trivial in themselves, yet inattention to them displays ignorance or carelessness on the part of the writer and the consequences are very apt to be detrimental.

PAPER TO USE. The selection of paper depends largely upon the nature of the letters to be written. Business letters are usually written on larger sheets of paper than letters of friendship and other notes. The sheet selected should be appropriate to the purpose for which it is employed, both in size and quality. Any good bookstore is able to furnish sizes adapted to the wants of any article or class of letters written.

For personal letters, the order in which the pages are used and the sheet is folded should be such as shall not be confusing to the reader. The most careful attention should be given to margins, paragraphs, and indentations. It is very important to be original and to avoid imitating the style of others. What is written should represent the writer, not some one else.

HEADING. The heading consists of the post-office address of the writer and the date on which the letter is written. Custom has decreed that the proper place for the heading is in the right-hand upper corner of the first page. The first line should be about one and a half inches from the top of the page. The second line should be commenced a little to the right and the third line, if any, a little to the right of the second, thus:

1 *Alliance, Ohio, Sept. 4, 1910.*

2. *1342 Fifth Avenue, New York City,*
Aug 12, 1910.

3. *University of Minnesota,*
Minneapolis, Minn.,
Oct, 22, 1910

4. *R. F. D. No. 3,*
Avondale, Chester Co., Pa.,
Nov. 26, 1910.

It is essential to begin every important part of the heading with a capital letter. The parts should be separated by commas, the abbreviations should be followed by periods, and a period should be placed at the end of the heading.

INTRODUCTION. The introduction consists of two parts, the *formal address* and the *salutation*. The *formal address* embraces the *title*, the *name*, and the *residence* or *place of business* of the person addressed. Whether the address takes up one, two, or three lines is optional with the writer, but each line should be followed by a comma, except the last line, which should be followed by a period. Titles are prefixed before the name, as follows:

Master—boy.

Miss—girl or unmarried lady.

Misses—several unmarried ladies.

Mr.—gentleman.

Messrs. (Messieurs)—several gentlemen.

Mrs.—married lady or widow.

Mesdames (mà-dăm')—several married ladies or widows.

Rev.—clergyman.

Rev. Dr.—clergyman who is a doctor of divinity.

Dr.—physician or surgeon.

Hon.—public man.

Esq.—may follow name of gentleman, but two titles, as Mr. James Smith, Esq., should not be used.

Prof.—prominent teacher.

A. M., LL. D., etc., may be suffixed in writing persons who hold literary or professional degrees.

SALUTATION. The *salutation* is the word or phrase of address used in beginning the letter. It varies with the formality of the letter, or the position occupied by the person addressed.

Such terms as *Sir, Madam, Rev. Sir,* etc., may be used in writing strangers, but in general writing they should be avoided, as they are too formal. In letters of friendship the salutation may be *My dear Elizabeth, My dear nephew, Dear Aunt Mary,* etc.; in a business letter to an individual it should be *Dear sir, My dear sir,* or *My dear Miss Martin;* in a letter to a firm it should be *Sirs, Dear Sirs,* or *Gentlemen.*

The official title may be used in addressing a military or naval officer, as *Captain, Major, Commodore, General, Admiral.* A governor is addressed as *Sir, Governor,* or *His Excellency.* The President may be addressed as *President* or *His Excellency.*

No general rule is recognized in regard to punctuation of the salutation. The comma, colon, or semicolon may be used either alone or in connection with the dash, as *My dear sir:*—. According to some authorities the comma is the least and the colon is the most formal.

BODY OF THE LETTER. The *body of the letter,* or the part which contains the subject-matter, is the most important. It should be written in the natural flow of language and should vary in style and length according to its character.

It is usually thought best to commence the body of the letter one line below and directly underneath, or to the right, of the salutation. In business letters, where the salutation is short, it is not improper to begin on the same line with the salutation.

Formal letters should not be written on a half sheet, but business letters, where the card of the person or company is printed at the top of the sheet, may be written on a single leaf.

CONCLUSION. The *conclusion* of a letter consists of the *complimentary*

close and the ***signature of the writer.*** The choice of a complimentary close depends upon the relations which exist between the writer and the person to whom the letter is addressed.

A business letter should be closed with an expression of respect only, such as *Yours truly, Yours respectfully, Yours very truly,* etc.

Letters of friendship require some expression of regard. Among the more common forms of complimentary closings are the following: *Your loving son, Ever your friend, Yours affectionately, Very sincerely yours,* etc.

The complimentary close should be written one line below the last line of the main part of the letter and a short distance to the right. Except in cases of familiar relationship, the name should be signed in full and should be clear and legible.

A lady should make it plain whether she is to be addressed as *Miss* or *Mrs.* This may be done either by placing Miss or Mrs. in parenthesis before the name, or by writing the whole address below and to the right of the signature. Thus:

(Miss) Effie Schuneman.
Mrs. Thomas L. Benton.

CAUTION. Titles of this kind should be prefixed only in writing to strangers. A married lady should sign the initials and name of her husband, and a widow should use her own initials and name.

SUPERSCRIPTION. The *superscription* is the address which is placed on the outside of the envelope. It should include all that is necessary for the letter to reach its destination and should be plainly and carefully written. It may be arranged in three or four lines, each one beginning to the right of the preceding one.

A properly written address contains the *title,* the *name,* the *street number,* the *post office,* and the *state* or *province.* When writing to a small town or country post office, it is well to give the county. The usual plan is to write the street number just below the name, but it may be written in the left-hand corner.

PUNCTUATION. The *punctuation* in writing the superscription has resolved itself largely into one of taste. All abbreviations and the last line should be followed by the period. If any other punctuation is used, it consists of a comma after each line, although these commas may be omitted with perfect propriety.

LETTERS OF BUSINESS. Since the purpose of business letters is to gain or impart information, they should be perfectly clear in meaning. It should be the purpose to make them short and concise. This is exemplified by the following motto posted over the door of the printing office of Aldus & Co.:

Talk of Nothing but Business and
Dispatch That Business Quickly.

Business men have no time to waste reading long, rambling letters, interspersed here and there with unimportant details. On the other hand, a business letter should be answered promptly and any information requested should be given accurately.

Too much stress cannot be laid upon punctuation, correct spelling, and clear English in business letters, as it is among business men that we find the keenest critics.

Applicants for responsible positions have been rejected either because they did not know the correct forms or, knowing them, did not heed them. For this reason, every letter should be examined carefully when it is finished to see that it contains no omissions and no mistakes.

LETTERS OF FRIENDSHIP. Letters of friendship are so different from business letters that it is more difficult to make definite rules in regard to them.

Their purpose should be to induce pleasure, and it should be the endeavor of the writer to make them as entertaining as possible. Much of the charm of a friendly letter lies in the easy and natural way in which it is written.

Only when we feel the individuality, the personality of the writer, has the written message any charm—a charm that seems to be slipping away from many letters of this new century, crowded out, perhaps, by the rush and throng of society engagements, by the demands of club life, or the absorption of business.

WRITING OF NOTES. Note writing bids fair to become a fine art. There are few days during a month when a note of some kind is not in order.

All presents should be acknowledged by writing a note. To omit this courtesy is to brand one's self as deficient of good breeding.

Notes may be *formal* or *informal*. *Formal notes* include all forms of *invitations, replies,* and *announcements.* They should always be written in the third person.

The heading, salutation, close, and signature should all be omitted. The address of the writer may be written either below the body of the letter or a little to the left.

Good by—my paper's out so nearly,
I've only room for Yours sincerely.
—*Thomas Moore.*

Models in Letter Writing.

As every letter of friendship depends upon what the writer has to say at the time, it is difficult to suggest models that answer the purpose in every detail. A good plan is to write as you would talk, giving the leading details in an interesting manner.

Friends and relatives enjoy good letters, whether they come from home or from a distant city or country. Such letters strengthen the ties of friendship and turn the mind to pleasant thoughts and hopeful ambitions. The rule is to write often and have many good things to tell in an interesting manner.

Model 1.

Letter of Business.

122 Center St.,
Des Moines, Iowa,
Sept. 4, 1910.

Newson & Co.,
378 Wabash Ave.,
Chicago, Ill.

Dear Sirs:

(Body of Letter).

Very truly yours,
Warner A. Dudley.

Model 2.

Letter of Business.

224 Michigan Ave.,
Chicago, Ill.,
Nov. 30, 1910.

Daniel Low & Co.,
232 Essex St., Salem, Mass.,

Gentlemen:

(Body of Letter).

Respectfully yours,
(Miss) Minnie A. Roe.

Model 3.

Letter of Friendship.

Madison, Wisconsin,
Oct. 12, 1910.

My dear niece,

(Body of letter).

Lovingly yours,
Miriam Bryant.

Model 4.

Superscription.

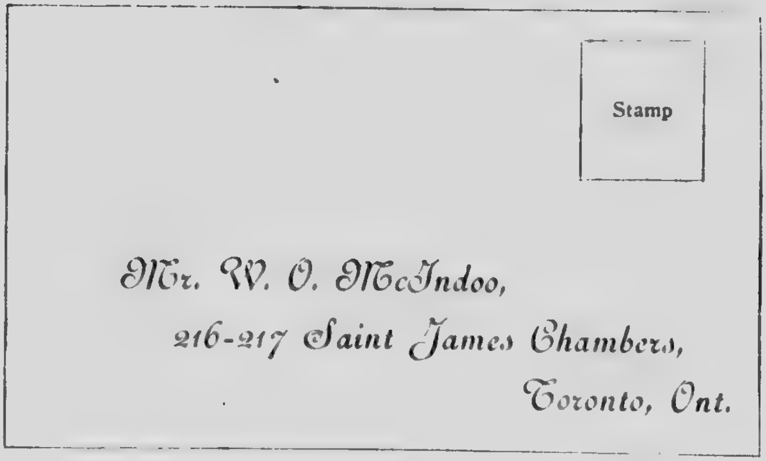
Stamp

Mrs. F. B. Wylie,
342 Euclid Ave.,
Cleveland, Ohio.

The writer of a note may place the address either below the body of the message or a little to the left.

Model 5.

Superscription.



Stamp

Mr. W. O. McIndoo,
216-217 Saint James Chambers,
Toronto, Ont.

The writer of a note may place the address either below the body of the message or a little to the left.

Model 6.

INVITATION.

Mr. and Mrs. G. Bradshaw
request the pleasure of your company on
Tuesday Evening,
September ninth, at
eight o'clock.
1019 Euclid Ave.

Model 7.

ACCEPTANCE.

Miss LeCompte accepts with pleasure Mr. and Mrs. Bradshaw's invitation for Tuesday evening, September the ninth, at eight o'clock.

Model 8.

REGRET.

Mr. Jones regrets that a previous engagement prevents his accepting Mr. and Mrs. Bradshaw's kind invitation for Tuesday evening, September the ninth.

Model 9.

INVITATION.

My dear Mrs. Leathem,

Will you not give us the pleasure of your company at dinner on next Wednesday evening at six o'clock? Miss Rae of Davenport is visiting us, and we wish our friends to meet her.

Very sincerely yours,
BERTHA PIKE.

229 Center St.,
Nov. 20, 1910

Model 10.

REGRET.

Nov. 21, 1910.

My dear Mrs. Pike,

I sincerely regret that I cannot accept your invitation to dinner next Wednesday evening, for I have made a previous engagement which it will be impossible for me to break.

Yours sincerely,
GRACE LEATHEM.

The difference between *formal notes* and *informal notes* consists in the forms in which they are written. All replies to informal notes should be written in an informal manner, being simply brief letters of friendship.

Model 11.

Introduction.

Sherbrooke, Que., Aug. 4, 1910.

Miss Anna Sherman,
Jamestown, N. Y.

My dear friend:

This will introduce to your kind consideration Mr. D. V. Gesner, a very worthy gentleman, whom I commend to your kind attention.

Your friend,
Ella T. Kearns.

Model 12.

Congratulation.

Boone, Iowa, July 20, 1910.

Miss Esse V. Hathaway,
Marshalltown, Iowa.

Dear friend:

Kindly accept my hearty congratulations on your success in writing and publishing your new book, *The Little Corsican.* I had the utmost faith in your ability to produce a work of great value, one that would be interesting in style and valuable for the facts of history which you collated, but let me say the beauty and value of the completed work surpass even the highest anticipations of your best friends.

You have my best wishes in the field which you have chosen, and I trust that your work will be entirely agreeable.

Very truly yours,
Gracia E. Tucker.

Model 13.

Condolence.

Chicago, Ill., Aug. 22, 1910.

Mr. John B. Alden,
Atlanta, Ga.

My dear sir:

Permit me to express to you the deep sorrow I felt on learning of your failure in securing the nomination for Governor in your State. Although you had the coöperation and support of a large part of the more intelligent voters, the time which you had for making a canvass was entirely too short.

Your position on the leading issues, in my opinion, is the correct one. Since "Truth, crushed to earth, will rise again," I am confident of your ultimate success. Deeply regretting the defeat for the present, I look hopefully forward to a complete victory in the future.

Very truly yours,
Belden J. Clark.

Model 14.

Application.

Tiffin, Ohio, July 23, 1910.

Holst Publishing Company,
Boone, Iowa.

Gentlemen: Kindly consider my application for the position of manager of sales for your company. I am a graduate of the Tiffin High School and hold a diploma issued by the Capitol City Commercial College of Des Moines, Iowa.

Herewith I enclose testimonials from a number of prominent business men of Cleveland and Chicago, certifying to my ability and successful experience in the line of work for which you are receiving applications.

Respectfully yours,
Chas. E. Medaris.

Model 15.

Recommendation.

Toronto, Ont., June 30, 1910.

Hon. John D. Jones,
President of the School Board,
Ottawa, Ont.

Dear sir:

The bearer of this letter, Prof. J. C. King, has been personally known to me the ten years last past as a teacher and superintendent of schools. I have visited the classes where he instructed and know of his ability to manage and teach.

Professor King is a teacher by nature and training. He has not only made an entire success of his work, but has acquired liberal and broad views of the teachers' profession. He is eminently fitted to take charge of your schools. I can speak of him and his work in the highest terms of praise.

Very respectfully yours,
David L. Maynard.

Exercise I.

Write suitable headings, salutations, complimentary endings, and signatures for the following:

To American Book Company, 300 Pike St., Cincinnati, Ohio.
To a dear friend.
To the school board, asking for supplies.
To the Governor of your State.
To a stranger.
To a dry goods firm.

Exercise II.

Write proper superscriptions to letters written to the following:

Miss Laura Graham, living at 1221 First Ave., Cedar Rapids, Iowa.
The wife of a minister in Toronto, Ont.
Your sister, who is visiting some friend.
William A. Mowry, 17 Riverside Square, Hyde Park, Mass.
The Rev. Charles St. Clair, 650 Center St., Davenport, Iowa.

Exercise III.

Write to John Wanamaker, Philadelphia, Pa., asking him to send you samples of silk.

In reply to an advertisement, write an application for the position of stenographer.

Write to the publishers of *The Century Magazine,* New York, N. Y., asking them to change your address from 212 State St., Chicago, Ill., to 28 High St., Columbus, Ohio.

Write to the President of University of California, Berkeley, Cal., for information regarding the course of study in law.

Exercise IV.

Write a letter to a classmate, who is in the hospital, telling him the school news.

Write to Puttkammer & Mühlbrecht, Buchhandlung für Staatswissenschaft, Berlin, Germany, for a copy of *Statistisches Jahrbuch.*

Write for information about silver mining to J. M. Macedo, Cónsul del Perú. Lima, Perú.

Write to your mother, describing your visit in Quebec.

Supposing you are camping, write of the experiences to your sister.

Write to some boy friend of your hunting and fishing expeditions in the West.

Exercise V.

Write an invitation to a simple home wedding.

Write a formal invitation to an afternoon reception.

Write an acceptance of the same.

Write regrets to the above invitation.

Write to a friend, thanking him for a box of candy or beautiful flowers.

Write congratulating your friend of his new appointment.

Write a note of sympathy to a dear friend, on the death of her mother.

Zoölogy

Condition **Theory**

ZOÖLOGY, the science that treats of the animal world, is studied from two aspects—*condition* and *theory*. The former aspect is concerned with facts as they are proven to be, while the latter takes into account the facts as they are observed. In these aspects, zoölogy relates to *observed phenomena* and the *deductions* that are based upon them.

The New Teachers' and Pupils' Cyclopaedia is recommended as a prolific source of information for the study of this branch of general knowledge. It contains articles on all the important forms of animal life, both the past and present, and furnishes the basic facts for exhaustive research.

Outline.

ARCHAEOPTERYX.

- I. Animal Life.
  - a. Form and structure.
  - b. Reproduction.
  - c. Embryology and growth.
  - d. Habit and instinct.
  - e. Distribution and migration.
  - f. Relationship.
    - 1. To other animals.
    - 2. To their environments.
- II. Extinct Animals.
  - 1. Birds—Archaeopteryx, dinornis, dodo, etc.
  - 2. Reptiles—Dinosauria, ichthyosaurus, pterodactyl, etc.
  - 3. Crustaceans, fishes, insects.
  - 4. Mammals—Dinotherium, mammoth, mastodon, etc.
- III. Classification of Living Forms.
  - 1. Vertebrata, or Vertebrates.
    - A. Origin of name.
    - B. Description.
      - a. Skeleton.
      - b. Spinal cord.
      - c. Lungs.
      - d. Heart.
      - e. Stomach.
      - f. Brain, etc.
    - C. Functions.
      - a. Digestion.
      - b. Secretion (Glands).
      - c. Respiration.
      - d. Circulation.
      - e. Locomotion.
    - D. Protection of body—Skin, hair, scales, feathers, etc.
    - E. Examples—Amphibians, birds, mammals, reptiles, etc.

2. Arthropoda, or Articulates.
   A. Nervous system—Well developed.
   B. Eyes—Simple or compound.
   C. Parasitic—Some species.
   D. Reproduction—By eggs only.
   E. Divisions—Arachnida, crustacea, and antennata.
   F. Examples—Lobsters, spiders, cockroaches, butterflies, flies, bees, and insects.
3. Coelenterata, or Many-Celled.
   A. Organism—Simple.
   B. Body cavity and circulatory system not distinctly separate.
   C. Food enters through mouth, passing into a system of chambers or tubes.
   D. Tentacles—Organs of touch, used as hands and fingers.
   E. Home—Sea (Mostly) and in fresh water.
   F. Types.
      a. True swimmers—Jellyfish.
      b. Cylindrical, fastened to some object—Corals, sea anemones, hydroids, etc.
4. Protozoa, or One-Celled.
   A. Minute, microscopic, invertebrate, simple, structureless organism of jellylike substance.
   B. Found in fresh or salt waters.
   C. Some live in moist earth or as parasites.
   D. Assimilate food into their protoplasmic being.
   E. Forms—Sponges, coral, hydras, etc.
5. Echinodermata, or Radiates.
   A. Third from the lowest division.
   B. Body—Five parts radiating from central axis.
   C. External skeleton—Calcareous, leathery, or covered with spines.
   D. Alimentary canal—Distinct from body, protected by skeleton.
   E. Nervous system—Radiate.
   F. About 3,000 living species—All marine.
   G. Seven divisions.
      a. Sea cucumbers.
      b. Sea urchins.
      c. Brittle stars.
      d. Starfishes.
      e. Cystoids.
      f. Pentremites.
6. Mollusca, or Shellfish.
   A. Unsegmented, bilateral body, four nerve cords.
   B. Supplied with shells, or muscular sac, or body is quite naked and unprotected.
   C. Shellfish—Those with shells.
      a. Univalves.
      b. Bivalves.
      c. Multivalves.
   D. Kinds—Nautilus, oyster, clam, slug, snail, cockle, etc.
   E. Acephala—Without a head; clams, oysters, mussels.
   F. Cephalopods—Head-footed; nautilus, octopus, cuttlefish.
   G. Number of species.
7. Vermes, or Worms.
   A. The lowest class of animals.
   B. Bodies—Elongate, flattened, or cylindrical.
   C. Structure—Segments, head, tail, surfaces, nervous system, heart, body cavity.
   D. Species—Numerous, but of same characteristics.
   E. Entozoa—Forms found in intestines of human body, especially children.

(Method Book Opp. 210)

ANIMALS SEEN IN ZOOLOGICAL GARDENS.

Elephant attacked by Boa Constrictor.

Giraffes

Panther of Africa.

Serpent.

Ant-eater.

Hyenas feeding on a species of Antelope.

Questions in Zoölogy.

Give the derivation of the word zoology. 3225.

What does this study embrace? Define each department.

To what classes of animal life did Solomon refer? Job? Jeremiah?

Of what do ornithology, herpetology, and arachnology treat?

Of what genus is man? Tell of his creation.

To which is animal intelligence due—instinct or reason? 105.

Define sense, nucleus, segment, parasite, protoplasm.

Which of the domestic animals are the most useful to man for (a) food, (b) clothing, and (c) beasts of burden?

Why do animals migrate? Name ten migratory birds.

What is meant by the following expressions: cold-blooded, ruminant, natural selection, and survival of the fittest?

Which class is of the lowest division of animals?

How has nature provided for the warmth and safety of wild animals?

Explain the habits of eating among carnivorous animals.

Which animal can go longest without drinking? Why?

Define the modern theory of embryology. 910.

Describe the functions of digestion and secretion.

What is microscopic zoölogy and why is it so named?

Why do some animals become extinct? Name five extinct species.

Related Subjects.

Acclimatization.
Amoeba.
Amphibia.
Anatomy.
Animal.
Animal Intelligence.
Arachnida.
Biology.
Birds.
Bone.
Carnivora.
Cell.
Cephalopoda.
Crinoidea.
Crustacea.
Dinosauria.
Egg.
Embryology.
Evolution.
Fauna.
Feather.
Fish.
Foraminifera.
Genus.
Hair.
Hoof.
Hybrid.
Infusoria.
Insects.
Jellyfish.
Longevity.
Mammalia.
Marsupialia.
Medusa.
Metamorphosis.
Microscope.
Mollusca.
Myriapoda.
Nautilus.
Parasites.
Polyp.
Protoplasm.
Protozoa.
Reptiles.
Rodentia.
Sea Urchin.
Species.
Spontaneous Generation.
Starfish.
Ungulata.
Vertebrates.
Worm.

Let cavilers deny
That brutes have reason; sure 'tis something more.
'Tis heaven directs, and stratagems inspire
Beyond the short extent of human thought
—*Somerville.*

The heart is hard in nature and unfit
For human fellowship, as being void
Of sympathy, and therefore dead alike
To love and friendship both, that is not pleased
With sight of animals enjoying life,
Nor feels their happiness augment his own
—*Cowper.*

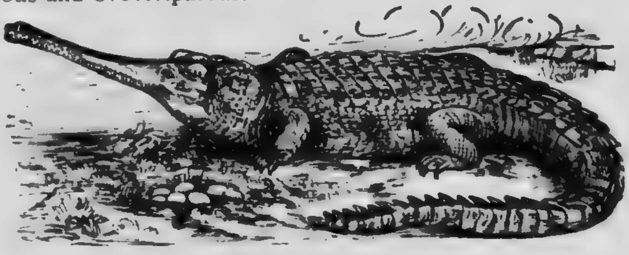
Reptiles.

I. Species—2,000.

II. Class—Cold-blooded, air-breathing vertebrates.
  a. Oviparous and ovoviviparous.

III. Body — Elongated.
  1. Tail.
  2. Skin.
  3. Limbs.

IV. Difference between.
  1. Amphibians.
  2. Birds.



GANGES GAVIAL.

V. Orders.
  1. Number—Ten (Six now extinct).
  2. Four living orders.
    A. Lacertilia—Lizards, chameleons, blindworms.
    B. Crocodilia—Crocodiles, alligators, gavials.
    C. Ophidia—Snakes.
    D. Chelonia—Turtles and tortoises.

VI. Food—Flesh, seaweed, insects, bugs, vegetables, flies, etc. (Larger ones often feed on smaller reptiles).

VII. Homes.
  1. Warm and tropical climates.
  2. In or near marshes, swamps, and larger bodies of water.

VIII. History.
  1. Antedate the Permian period.
  2. More numerous in earlier ages.

IX. Uses.
  1. Food.
  2. Destroyers of insects, flies, bugs, carrion, etc.
  3. Skins—Leather (Shoes, purses, etc.).
  4. Shells—Ornaments.
  5. Pets.
  6. Oil.

X. Kinds.
  1. Tortoise.
  2. Turtle.
  3. Toad.
  4. Frog.
  5. Gavial.
  6. Crocodile.
  7. Alligator.
  8. Lizard.
  9. Snake.
  10. Iguana, etc.

Questions on Reptiles.

Distinguish between amphibians and birds. 2397.

Name the four orders of reptiles now living. Give a list of the most common species.

With what safeguard from destruction has nature provided the reptiles?

What are the largest living reptiles?

State a peculiarity about the skin of snakes.

What is the Gila monster and what is said of its bite? 1110.

Tell about the size and hatching of crocodile and alligator eggs.

By what people were crocodiles formerly held sacred?

What reptiles are found in Canada?

Name three uses of alligator skins.

What classes of snakes are common to your neighborhood?

What is said about the chameleon changing its color of skin?

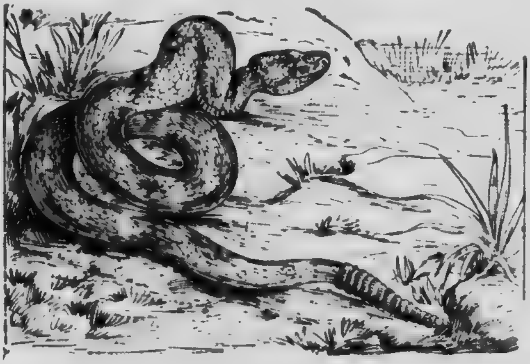
Of what value are toads in a garden or hothouse?

Snakes.

I. DESCRIPTION.
  1. Nearest relative—Lizard.
  2. Body.
    A. Elongated and cylindrical.
    B. Covering—Horny scales, lapping folds.
    C. Skin—Thin; shed at least once a year.
    D. Ribs—Sometimes hundreds of pairs.
      a. Give form to body.
      b. Aid in respiration.
      c. Organ of locomotion.
    E. Flesh—White and chickenlike, considered wholesome by some.
    F. Eyes—Small, unprotected by lids; sight feeble.
    G. Ears—Internal ear only, hear well.
    H. Nostrils—Two; keen sense of smell.
    I. Tongue—Forked.
    J. Fangs and poisonous glands.
  3. Eggs.
    A. Number.
    B. Places of deposit.
    C. Shell.
    D. Incubation.
  4. Food.
    A. Insects.
    B. Birds.
    C. Reptiles.
    D. Mice.
    E. Monkeys.
    F. Small quadrupeds.
    G. Fish.
    H. Eggs, etc.

II. SPECIES—From 1,500 to 1,800.
  1. Largest and most numerous in tropical regions.
  2. Wet regions—Boa, python, etc.
  3. Arid districts—Viper, adder, rattlesnake, etc.

III. GENERAL CLASSES.
  1. Burrowing snakes.
    A. Live under surface.
    B. Feed on invertebrate animals.
    C. Are most poisonous.
  2. Tree snakes.
    A. Live mostly in trees.
    B. Very poisonous.
    C. Bodies green and slender, or color of tree.
    D. Feed on insects and animals.
  3. Ground snakes.
    A. Remain mostly on ground.
    B. Live in burrows made by other animals.
    C. Few are poisonous.
  4. Fresh-water snakes.
    A. Good swimmers.
    B. Not poisonous.
    C. Feed on frogs, fish, and aquatics.
  5. Sea snakes.
    A. Generally poisonous.
    B. Rudder-shaped tail.
    C. Unable to move on land.



PRAIRIE RATTLESNAKE.

IV. CHARACTERISTICS.
   1. Mostly timid and harmless.
   2. Vocal utterance is only a hissing sound.
   3. Are affected by musical sounds.
   4. Some bodies so dilate as to enable serpents to swallow prey much larger than themselves.
   5. When large prey is devoured the snake lies dormant until the food is somewhat digested.
   6. Snakes aid farmers by destroying mice, locusts, gophers, grasshoppers, etc.
   7. They may be trained by professionals called *snake charmers.*

V. KINDS.
   1. Adder—Only poisonous snake in Great Britain.
   2. Asp—Native to Egypt and Libya.
   3. Boa—Large American serpent.
   4. Anaconda, or Water Boa—Skins used for bags and shoes.
   5. Garter, or Ribbon Snake—Small, harmless serpent.
   6. Rattlesnake—One of the most deadly poisonous.
   7. Viper—Resembles rattlesnake, native to Old World.

Questions on Snakes.

Mention and describe the five general classes of snakes. **2664.**

How do poisonous snakes differ from others?

Of what use are serpents? Can they be trained?

Upon which sense do snakes rely quite largely for their prey?

Explain the shedding of the skin and the structure of the fang.

Describe the formation of the rattles of the rattlesnake.

Why is the puff adder so named? The garter snake? The rattlesnake?

By whom is the cobra de capello held sacred? What is the rate of fatalities caused by its bite?

Relate the fable of Apollo slaying the python. 2312.

Which portion of Scripture refers to the asp? To the adder?

Name five kinds of snakes common to this vicinity.

With the bite of what snake did Cleopatra accomplish her suicide?

Upon what do snakes feed? Can a snake swallow a frog?

Where is the black snake, or blue racer, found? Is it poisonous?

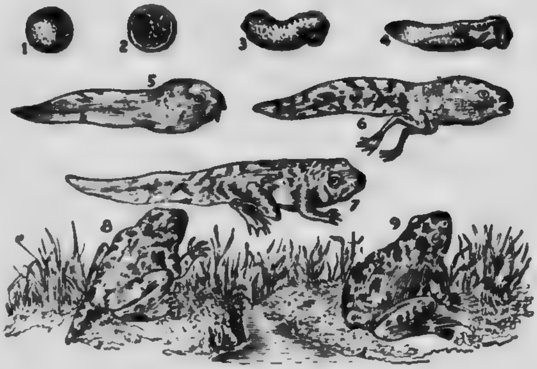
Upon the Rhine.

'Twas morn, and beautiful the mountain's brow—
   Hung with the clusters of the bending vine—
   Shone in the early light, when on the Rhine
We sailed and heard the waters round the prow
In murmurs parting, varying as we go,
   Rocks after rocks come forward and retire,
   As some gray convent wall or sunlit spire
Starts up along the banks, unfolding slow.
Here castles, like the prisons of despair,
   Frown as we pass!—there on the vineyard's side,
   The bursting sunshine pours its streaming tide;
While Grief, forgetful amid scenes so fair,
Counts not the hours of a long summer's day,
Nor heeds how fast the prospect winds away.

—*William Lisle Bowles.*

Frog and Toad.

I. Class—Tailless amphibians.
II. Head—Nose, mouth, teeth, tongue.
III. Legs—Feet, toes.
IV. Skin.
  a. Color.
  b. Warty in some species.
V. Eggs.
  1. Composition.
  2. Number.
  3. When laid.
VI. Stages of Development.
  1. Enlarging and hatching.
  2. Tadpole.
  3. Tadpole with outer gills.
  4. Tadpole with inner gills.
  5. Tadpole with two legs.
  6. Tadpole with four legs.
  7. Frog with rudimentary tail.
  8. Adult frog or toad.
VII. Breathing and Movements.
VIII. 1. Frogs—Common, bull, wood frogs.
  2. Toad—Natterjack, common, Surinam toads.
IX. Value.
  1. Food—Legs only. 2. Insect destroyers.
X. Nativity of Frogs and Toads.



METAMORPHOSIS OF THE FROG.

1, egg; 2, egg partly incubated; 3, newly hatched tadpole; 4 tadpole with gills; 5, outside gills replaced by internal ones; 6, tadpole with hind limbs; 7, tadpole with four limbs; 8, tadpole with rudimental tail; 9, adult frog.

> I had rather be a toad,
> And live upon the vapor of a dungeon,
> Than keep a corner in the thing I love,
> For others' uses.
>
> —*Shakespeare.*

Questions on Frogs and Toads.

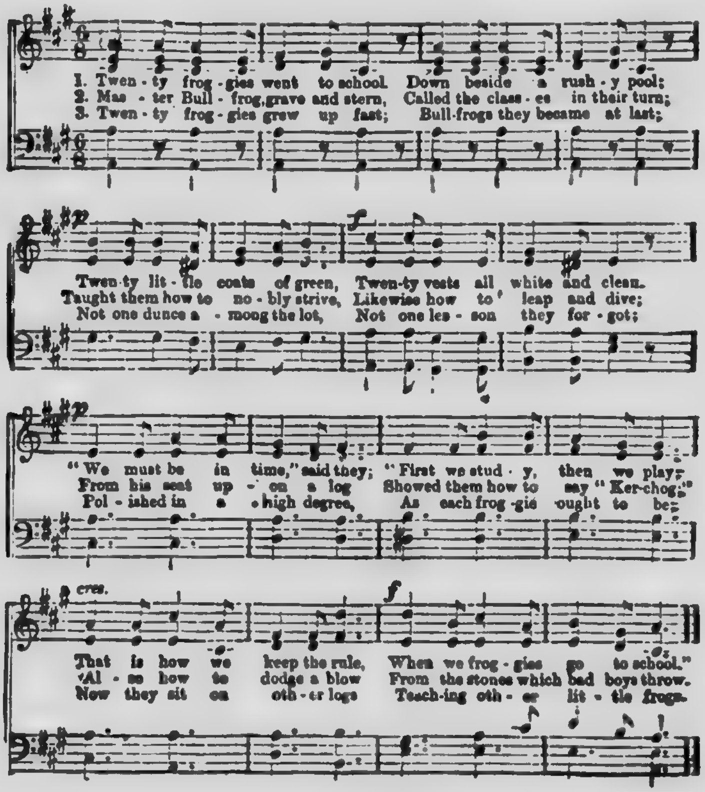
To which class of reptiles do frogs and toads belong?
Explain the structure of the tongue in these reptiles.
Describe the appearance of an adult frog. 1073.
Name the different stages of development.
When are frogs said to "live on their tails"?
Do they live in water entirely? If not, why not?
Which are able to swim better, frogs or toads? Why?
How many eggs are usually laid in a season by frogs?
What sounds are made by frogs and toads?
What is the name of the largest species of frogs?
In what respect do frogs resemble toads? How do they differ?
Learn the poem, "Twenty Froggies Went to School."

Frogs at School.

Twenty froggies went to school
Down beside a rushy pool;
Twenty little coats of green,
Twenty vests all white and clean.
"We must be in time," said they;
"First we study, then we play;
That is how we keep the rule
When we froggies go to school."

Master Bullfrog, grave and stern,
Called the classes in their turn;
Taught them how to nobly strive
Likewise how to leap and dive;
From his seat upon a log
Showed them how to say "Ker-chog";
Also how to dodge a blow
From the stones which bad boys throw.

Twenty froggies grew up fast;
Bullfrogs they became at last;
Not one dunce among the lot,
Not one lesson they forgot;
Polished in a high degree,
As each froggie ought to be;
Now they sit on other logs
Teaching other little frogs.


1. Twen - ty frog - gies went to school. Down beside a rush - y pool;
2. Mas - ter Bull - frog, grave and stern, Called the class - es in their turn;
3. Twen - ty frog - gies grew up fast; Bull-frogs they became at last;
Twen-ty lit - tle coats of green, Twen-ty vests all white and clean.
Taught them how to no - bly strive, Likewise how to leap and dive;
Not one dunce a - mong the lot, Not one les - son they for - got;
"We must be in time," said they; "First we stud - y, then we play;
From his seat up - on a log Showed them how to say "Ker-chog;"
Pol - ished in a high degree, As each frog - gie ought to be;
cres.
f
That is how we keep the rule, When we frog - gies go to school."
Al - so how to dodge a blow From the stones which bad boys throw.
Now they sit on oth - er logs Teach-ing oth - er lit - tle frogs.

Angling.

The pleasant'st angling is to see the fish
Cut with her golden oars the silver stream,
And greedily devour the treacherous bait.
—*Shakespeare.*

Tortoise.

I. Class—Reptiles.

II. Homes—In marshes, on dry land, in water.

III. Description.
  1. Skeleton.
    A. Carapace—Upper part.
    B. Plastron—Lower part.
  2. Size and weight.
  3. Age—Sometimes 100 years.

IV. Eggs.
  1. Number.
  2. Where deposited.
  3. Hatching.

V. Habits.
  1. Protrudes head, legs, and tail when walking or swimming.
  2. Draws them in while resting.
  3. Closes plates, or bony shell, tightly for protection in danger.

VI. Species.
  1. Salt-marsh terrapin—Atlantic coast of North America.
  2. Green turtle—West Indies and Gulf of Mexico.
  3. Loggerhead—Atlantic coast of America and Europe.
  4. Hawksbill—Warmer parts of America.
  5. Snapping turtle—Florida and New Brunswick.

VII. Use.
  1. Article of food.
  2. Shell—Ornamental work, combs, toilet boxes, etc.

GREEN TURTLE. TORTOISE.

Questions on the Tortoise.

Describe the skeleton of the tortoise. 2899.
Of what is the carapace formed? The plastron?
What means of protection does the tortoise use when endangered?
How are the eggs cared for during incubation?
What can you say of the largest tortoises?
Which move with greater speed, land or sea tortoises?
Name and describe several species. Which is noted for its delicate flesh?
From which species is the tortoise shell of commerce obtained?
Name some species of tortoises common to North America.
Are these reptiles of economic value?
Relate the story of *The Tortoise and the Hare.*

Astronomy

He telleth the number of the stars; He calleth them all by their names.—*Psalm 147, 4.*

ASTRONOMY, the most ancient of the sciences, treats of the phenomena of the heavenly bodies. It may be studied by departments, or branches, but these overlap each other to a large extent. However, they should be observed in a consecutive order.

The student is first referred to the article entitled ASTRONOMY, which introduces the subject by definitions and information of a general nature. The next step is to read the general articles in the order in which the science is generally subdivided. These include principally SOLAR SYSTEM, PLANETS, SATELLITES, TIME, STARS, COMET, NEBULA, CONSTELLATIONS, etc. With these should be correlated the biographies and achievements of famous astronomers.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA will be found very helpful—in fact, indispensable—in the study of astronomical phenomena. Consult it for information on *Day, Night, Seasons, Tides,* and many related topics. The helpful information, clearly classified as it is in this work, adds interest to this ever-interesting science.

Outline for Study.

I. ASTRONOMY AS A SCIENCE.
   1. Relation to other sciences
   2. Old and ancestral.

II. HISTORY.
   1. Assyria.
   2. Hindu.
   3. Egyptian.
   4. Chaldaea.
   5. Greece.
   6. China.
      a. Peculiar laws.
      b. Superstitious ideas of eclipse.

III. VALUE.
   1. Fixes disputed dates.
   2. Helped in making calendar.
   3. Aided navigation.
   4. Gave knowledge of exact size of earth.
   5. Enabled making of proper maps of continents and oceans.
   6. Aids materially in general surveying.
   7. Determines exact units of time.

IV. ASTRONOMERS.
   1. Thales.
      Founder of the science.
      Date and discoveries.
      Teaching.

2. Pythagoras.
   Teaching.
   Demonstration.
3. Hipparchus.
   Beginner of history proper.
   Date and nativity.
   Charts of heavens.
4. Ptolemy.
   Erroneous teaching.
5. Copernicus.
   Date.
   System.
6. Kepler.
   Laws of.
7. Galileo.
   Telescope.
8. Newton.
   Gravitation.
9. Laplace.
   Satellites of Jupiter.
   Rings of Saturn.
10. Donati, Brahe, Halley, Herschel, Yerkes, etc.

V. GENERAL SUBJECTS.
1. Apsides.
2 Solar system.
   a. Sun—Center of our system.
   b. Major planets—Satellites.
   c. Minor planets, or asteroids, and comets.
   d. Meteoroids—Furnish zodiacal light.
   e. Rings of Saturn.
   f. Nebular hypothesis.
   g. Solar phenomena.
      1. Records.
      2. Largest spots.
      3. Periodical variations.
      4. Appearances.
      5. Influences.
   h. Spectrum.
      1. Analysis.
      2. Spectroscope.
      3. Light.
      4. Rainbow.

DONATI'S COMET.

3. Moon.
   a. Comparative size and weight.
   b. Light reflected from sun.
   c. Changes or phases.
   d. Effect on tides.
4. Planets.
   a. Primary—Planets proper.
      1. Inferior—Mercury and Venus.
      2. Superior or major—Mars, Jupiter, Saturn, Uranus, Neptune.
      3. Minor—Number and size.
      4. Orbits of heavenly bodies.
      5. Symbols.
         a. Number of.
         b. Origin and signification.
5. Stars.
   a. Constellations.
      1. Magnitude.
      2. Centaur.
      3. Milky Way.
      4. Zodiac.
         a. Signs of.
      5. Cassiopeia.
      6. Orion.
      7. Ursa
         a. Major.
         b. Minor.
      8. Periodical or variable.
      9. Double and multiple.
6. Comets—Cause and nature of.
   a. Biela's.
   b. Donati's.
   c. Encke's.
   d. Halley's.

VI. BRANCHES.
  1. Astronomical geography.
  2. Uranography.
  3. Sidereal astronomy.
  4. Physical astronomy.

VII. OBSERVATORIES.
  1. First one—Alexandria.
  2. Arabian.
  3. Persian.
  4. European.
  5. American.
    a. United States.
    b. Canada.

VIII. INSTRUMENTS.
  1. Telescope.
  2. Barometer.
  3. Chronometer.
  4. Circle.
  5. Clock.
  6. Quadrant.
  7. Sextant.
  8. Chronograph.
  9. Micrometer.

IX. TIME.
  1. Year.
    a. Solar, tropical, or equinoctial.
    b. Sidereal.
    c. Common.
    d. Leap year.
    e. Civil.
    f. Lunar.
    g. Ecclesiastical.
    h. Divisions.
      1. Month.
        Average length.
        Number.
        Names and their origin.
        Lunar or synodical.
        Sidereal.
        Anomalistic.
        Solar.
        Calendar.
      2. Week.
        When instituted.
        Number of days.
        Naming of days.
      3. Day.
        Division.
        Cause.
        Kinds.
          a. Solar.
          b. Sidereal.
          c. Civil.
          d. Apparent.
          e. Astronomical.

Correlated Subjects.

Aberration.
Apogee.
Asteroid.
Astrology.
Aurora Borealis.
Calendar.
Chronograph.
Chronometer.
Circle.
Comet.
Conjunction.
Constellations.
Cycle.
Earth.
Eclipse.
Ecliptic.
Equator.
Equinox.
Gravitation.
Greenwich.
Halo.
Latitude.
Longitude.
Meridian.
Meteor.
Micrometer.
Milky Way.
Moon.
Nadir.
Nebula.
Nutation.
Observatory.
Parallax.
Perturbation.
Planets.
Pole.
Precession.
Refraction.
Satellite.
Seasons.
Sextant.
Solar System.
Spectroscope.
Stars.
Sun.
Telescope.
Tides.
Transit.
Twilight.
Year.
Zenith.
Zodiac.

Questions on Astronomy.

How does the history of astronomy compare with that of the other sciences?

What is the story of the shepherds and the stars?

Tell where the following is found: "The heavens declare the glory of God and the firmament showeth His handiwork."

Which nations studied this science centuries before the Christian era?

What was the theory of the Chinese regarding eclipses.

Who was the early founder of the science of astronomy? With whom does its history proper begin? 173.

State and explain Kepler's laws.

By whom was gravitation discovered? How is gravity modified?

Give a brief sketch of the life of Galileo.

State some uses of astronomy. Is it an exact science?

Name several branches of this science.

Prepare an article on comets. What brought Halley's name prominently before the world in recent years?

Give a list of the chief symbols used in astronomy.

What instruments are used? Describe a quadrant.

Compare the sun, moon, and earth in size and in motion.

Define ecliptic, satellite, meteor, corona, cycle, zenith.

Name the major planets in the order of size.

Distinguish between variable, temporary, and fixed stars.

Name and locate some noted observatories.

How do you account for the change of seasons? For the rainbow?

Literature.

The contemplation of celestial things will make a man both speak and think more sublimely and magnificently when he descends to human affairs.

—*Cicero.*

The smallest dust which floats upon the wind
Bears this strong impress of the Eternal mind:
In mystery round it subtile forces roll,
And gravitation binds and guides the whole.
—*Selected.*

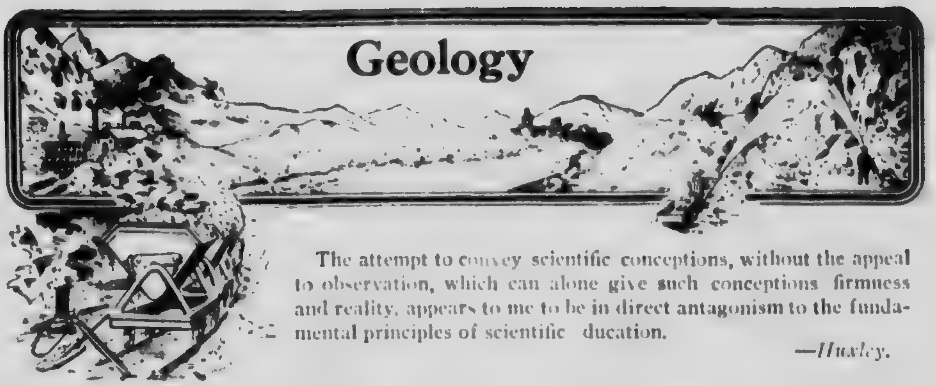
Be like the sun that pours its ray
To glad and glorify the day;
Be like the moon that sheds its light
To bless and beautify the night;
Be like the stars that sparkle on,
Altho' the sun and moon are gone;
Be like the skies that steadfast are,
Though absent sun and moon and star
—*Selected.*

The sun is not a-bed when I
At night upon my pillow lie;
Still round the earth his way he takes,
And morning after morning makes.

While here at home at shining day,
We round the sunny garden play,
Each little Indian sleepy-head
Is being kissed and put to bed.

And when at eve I rise for tea,
Day dawns beyond the Atlantic sea;
And all the children in the West
Are getting up and being dressed!
—*Robert Louis Stevenson.*

Geology



> The attempt to convey scientific conceptions, without the appeal to observation, which can alone give such conceptions firmness and reality, appears to me to be in direct antagonism to the fundamental principles of scientific ducation.
>
> —*Huxley.*

THE study of geology, which investigates the structure of the earth, is treated under the general title GEOLOGY. It answers the questions—Of what materials is the earth composed? What causes produced the present arrangement of these materials? Are geological forces still active in producing changes?

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA is recommended as a reference in the study of geology. It contains hundreds of articles on mineralogical subjects, such as may be grouped under the general headings of gems, stones, fossils, and alluvial deposits. The student is referred to the following

Correlated Subjects.

Algonkian.
Archaean.
Basalt.
Bed.
Boulder.
Cambrian.
Carboniferous Age.
Chalk.
Cinnabar.
Clay.
Cleavage.
Coal.
Cretaceous Period.
Crystallography.
Dike.
Earthquake.
Eocene.
Erosion.
Erratics.
Fault.
Flood Plain.
Fossil.
Glaciers.
Igneous.
Joints.
Jurassic.
Lava.
Loess.
Mammoth.
Marl.
Metamorphic Rocks.
Mineralogy.
Mountain.
Niagara Series.
Obsidian.
Oölite.
Ordovician.
Ore.
Peat.
Pliocene.
Quaternary.
Sandstone.
Shale.
Silurian System.
Soil.
Stones, Precious.
Stratification.
Terrace.
Tertiary Period.
Triassic System.
Valley.
Volcano.

Outlines in Geology.

I. DEPARTMENT OF NATURAL SCIENCE.
    1. Treatment.
    2. Investigation.
    3. Study.
        A. Early students.
            a. Herodotus.
                1. Studied carefully formation and fertility of soil, in Egypt, and traced cause.
            b. Strabo.
                1. Greatest of early geologists.
                2. Flourished in 1st century.
                3. Discussed origin of fossils.
            c. Werner.
                1. Gave modern geology its widespread interest.
                2. Theories.
            d. Hutton.
                1. Directed attention to causes now existing in periodical formations.

            2. Held contrary view to Werner.
            3. Published *Theory of the Earth*.
    - B. Present schools.
        - a. Catastrophism.
            1. Series of creations and catastrophes.
            2. Representatives.
        - b. Uniformitarianism.
            1. Reasons of all geologic phenomena constituted by causes now in operation.
            2. Representatives.
        - c. Evolution.
            1. Similar to above.
            2. Representatives
            3. Theory regarding time required for production of the present conditions.
        - d. General theory.
            1. Interior and surface of earth once highly heated.
            2. Cooled gradually.
            3. Crust formed.
            4. Action of water and heat.
            5. Rock formations.

II. LIFE PERIODS.

1. Archaean time—Dawn of life.
    - A. Extremely high temperature.
    - B. Creation of simpler forms.
    - C. North America largely submerged.
    - D. Formation of iron.
2. Paleozoic.
    - A. Fossil remains.
        - a. Mollusks, protozoa, radiates, and articulates.
3. Silurian, or Age of Invertebrates.
    - A. Rocks under water—Consisted of limestone, sandstone, and shales.
    - B. Formed of clams, oysters, etc.
4. Devonian Age.
    - A. First vertebrate fishes.
    - B. Plants became abundant.
    - C. Appearance of vast swarms of insects.
5. Carboniferous Age.
    - A. Surface covered with gigantic fernlike and other plants.
    - B. Formation of coal beds.
    - C. Alternated elevations and subsidences.
    - D. Animals of the subkingdoms lived.
    - E. Reptiles began to appear.
6. Mesozoic time, or Age of Reptiles.
    - A. Numerous reptiles abounded.
    - B. Plants and animals began to resemble existing species.
    - C. Ichthyosaurus and plesiosaurus common.
    - D. Great birds left foot imprints as fossil remains on forming rocks.
7. Cenozoic time.
    - A. North America largely above the sea.
    - B. Abundance of fresh-water lakes.
    - C. Abundant vegetation in Arctic Zone—Redwood, magnolia, etc.
    - D. Large animals abundant in Rocky Mountains.
    - E. Glacial period.
        - a. Swept over northeastern portion of continent.
        - b. Destructive drifts and boulders prevailed.

F. Champlain period.
a. Alternating floods and varying climates
b. Return of tropical climate.
c. Gradual fall of temperature.
8. Quaternary Age
A. Present animals and plants appeared.
B. Creation of man.

III. GEOLOGISTS.

Agassiz.
Buckland.
Buffon.
Cuvier.
Dana.
Darwin.
Dawson.
Geikie.
Hayden.
Hitchcock.
Huxley.
Le Conte.
Lyell.
Miller.
Murchison.
Powell.
Silliman.
Smith.
Strabo.
Tyndall.
Winchell.

Questions on Geology.

Of what does geology treat? What are fossils? 1111.
Distinguish between geology and mineralogy.
Name some early students of geology and state the theories they advanced.
What are the three recognized schools of geology to-day?
To which school does Lyell belong? How does he support his opinions?
Explain what is meant by igneous, sedimentary, and metamorphic rocks.
Name the principal life periods. In which do we live?
How may earthquakes and volcanoes be accounted for?
Briefly describe Geological Survey.
What caused the elevations and depressions on the earth's surface?
What was the glacial period? By what other name is it known?
What is meant by Azoic and Eozoic?
Speak of the Age of Reptiles and the Carboniferous Age.

Bugle Song.

The splendor falls on castle walls
  And snowy summits old in story,
The long light shakes across the lakes,
  And the wild cataract leaps in glory.
Blow, bugle, blow! set the wild echoes flying:
Blow, bugle; answer, echoes—dying, dying, dying!

O hark, O hear! how thin and clear,
  And thinner, clearer, farther going!
O sweet and far, from cliff and scar,
  The horns of Elfland faintly blowing!
Blow! let us hear the purple glens replying:
Blow, bugle; answer, echoes—dying, dying, dying!

O love! they die in yon rich sky:
  They faint on hill, or field or river;
OUR echoes roll from soul to soul,
  And GROW forever and forever.
Blow, bugle, blow! set the wild echoes flying;
And answer, echoes, answer—dying, dying, dying!

—*Tennyson.*

Coal.

I. DESCRIPTION.
    1. Carbonaceous mineral.
    2. Appearance.
    3. Use.
    4. Composition.
        A. Carbon.
        B. Hydrogen.
        C. Oxygen.
        D. Nitrogen.
        E. Earthy impurities.
    5. Formation.
        A. Vegetable matter.
            a. Luxuriant growth accumulated.
            b. Decomposed.
            c. Compressed and chemically changed.
            d. Solidified and reduced.

II. KINDS.
    1. Anthracite—90 per cent. carbon.
        A. Burns with little flame.
        B. Much used in kilns, furnaces, and by blacksmiths.
        C. Most valuable.
    2. Bituminous.
        A. Used for fuel in heating and in engines.
        B. Greatly exceeds in output.
    3. Cannel.
        A. Appearance.
        B. Flame.
        C. Used in gas making.
    4. Lignite or brown—50 per cent. carbon.
        A. Used less for manufacturing purposes.
        B. Valuable for fuel in sections where other coal is minus.
        C. Burns easily with extra draft admitted.

III. VEINS.
    1. Number—1 to 4.
    2. Thickness—2 ft. to 50 ft.
    3. Deposits.
        A. Drifts, or pockets.
        B. Measures.

IV. MINING.
    1. Differing of methods.
        A. Thickness of veins.
        B. Class of coal.
        C. Character of roof.
        D. Blasting.
        E. Long-wall work.
        F. Mining machinery.
    2. Slopes.
        A. Coal crops out at hillsides.
        B. Opening and sloping inroad made into hillside.
    3. Shaft.
        A. Perpendicular passage sunk to veins of coal many feet below.
        B. Entries driven and rooms made.
        C. Coal obtained by picking, sledging, blasting, or drilling.
        D. Brought to surface by cages.

V. HISTORY.
  1. Not known to early ancients.
  2. Used in 852 A. D. in England.
  3. Common prejudice prevented early usage.

VI. DISTRIBUTION.
  1. United States.
    A. Found in 35 states and territories.
    B. Products in 29 reached commercial quantities.
    C. Leading producers.
      a. Pennsylvania.
      b. West Virginia.
      c. Illinois.
      d. Ohio.
      e. Alabama.
      f. Indiana.
      g. Colorado.
    D. Annual production and value.
  2. Canada.
    A. Annual output.
    B. Deposits.
      a. British Columbia.
      b. Nova Scotia.
      c. New Brunswick.
      d. Alberta.
  3. Great Britain.
  4. Germany.
  5. Austria-Hungary.
  6. Russia.
  7. Philippine Islands, and others.

Coal in Literature.

Sing a song of coal in a mine so deep,
Where the mighty mountain guarding watch doth keep.
Down must go the miner in the ground so damp,
Each one with his pickax and his tiny lamp.
—*Jessie L. Gaynor.*

Not many years ago men would have laughed, had they been told to dig for the rays of the sun in the darkness of the earth. But we strike a match and discover that the black heart of the coal is the treasury of sunbeams. —*Newman Smyth.*

Questions on Coal.

What is coal and of what is it composed? 609.

Explain briefly the formation of the coal beds.

Name several kinds of coal. Which is most valuable?

Which kind of coal contains the greatest per cent. of carbon? Why is lignite coal of lesser value?

What is a coal measure? State the difference between a slope and a shaft.

Illustrate coal stratum with a drawing.

At about what date was coal first used for fuel in England?

Where are the chief deposits of coal in England? What is the annual output?

State the value of the annual production of coal in the United States. Name the leading coal-producing states.

What serious objection was raised against the use of coal in early days?

Name some of the greatest coal-producing countries of the world.

Gold.

I. DESCRIPTION.
1. Precious metal.
2. Color, bright yellow.
3. Specific gravity—19.
4. Atomic weight—196.
5. Melting point—About 2282° Fahr.
6. Properties.
   A. Ductility—Grain can be drawn into wire 500 ft. long, or same amount is sufficient to gild two miles of silver wire.
   B. Malleability—One grain may be beaten out so as to cover 56 sq. in. (thickness, $\frac{1}{281,980}$ part of an inch).

II. CHARACTERISTICS.
1. Not acted upon by water and oxygen.
2. Not tarnished by air.
3. Not soluble by hydrochloric, nitric, or sulphuric acids.
4. Soluble in mixture of nitric and hydrochloric acids.
5. Crystallizes in cubes and other regular forms.
6. Yields aurous and auric salts.

III. KINDS.
1. Pure gold.
   A. 24 carats fine.
   B. Very soft.
2. Alloy.
   A. ¼ copper and ¾ gold, usually used by jewelers.
   B. 14 to 18 carats fine commonly used.
3. Coinage.
   A. Standard 22 carats fine—2 parts copper and 22 parts gold.
4. Nature.
   A. Gold and silver alloy.
   B. Used in medicine and by dentists.

IV. WHERE FOUND.
1. In alluvial deposits (placer mining).
   A. Small particles, called grains or nuggets.
   B. Separated from foreign matter by washing in troughs and pans.
2. In sandstone, slate, quartzite, granite, and serpentine.
3. In fissures or quartz veins.
   A. Mined by machinery.
   B. Rock crushed.
   C. Gold separated by excessive heat.
   D. Natural gas, coal, and electricity employed as agents in smelting.
   E. Refined by repeated subjection to heat.

V. CUPELLATION.
1. Extracted from ore by pulverizing.
2. Sulphur and arsenic set free by heating gold-bearing pyrites
3. Quantity of mercury and sodium added.
4. This amalgam heated to liberate the mercury.

VI. USE.
1. Coin.
2. Jewelry.
3. Dentistry.
4. Medicine.
5. Photography.

VII. DISTRIBUTION.
  1. North America.
    A. United States.
      a. California.
      b. Montana.
      c. South Dakota.
      d. Utah.
      e. Arizona.
      f. New Mexico, etc.
    B. Canada.
      a. British Columbia.
      b. Yukon.
      c. Saskatchewan.
    C. Alaska—Klondike.
  2. South America.
    A. Peru.
    B. Bolivia.
  3. New Zealand.
  4. South Africa.
  5. Ural Mountains.

VIII. STATISTICS.
  1. Value of world's production since 1493.
  2. Present annual production.
  3. Comparative outputs.
    a. North America.
    b. South America.
    c. Europe.
    d. Asia.
    e. Africa.
    f. Australia.
  4. Largest pure gold nugget.
    a. Where found.
    b. Date.
    c. Weight.

Gold in Literature.

All that glistens is not gold,
Often have you heard that told;
Many a man his life hath sold
But my outside to behold.
—*Shakespeare.*

Can gold calm passion, or make reason shine?
Can we dig peace, or wisdom, from the mine?
Wisdom to gold prefer; for 'tis much less
To make our fortune than our happiness.
—*Young.*

Gold! gold! gold! gold!
Bright and yellow, hard and cold,
Molten, graven, hammer'd, and roll'd;
Heavy to get, and light to hold;
Hoarded, barter'd, bought, and sold
To the very verge of the churchyard mold;
Price of many a crime untold;
Gold! gold! gold! gold!
Good or bad a thousand fold!
How widely its agencies vary—
To save—to ruin—to curse—to bless—
As even its minted coins express,
Now stamped with the image of good Queen Bess,
And now with a bloody Mary.
—*Hood.*

Questions on Gold.

Compare the value of gold with that of other metals.
For what three things is it noted?
State some of its characteristics. 1161.
With what metals is gold alloyed?
How many carats are generally used in jewelry?
Name some gold coins now in use.
Give a list of articles of jewelry made of gold.
How is gold refined? Illustrate its malleability.
Where is this metal first mentioned in the Bible?
Tell when the gold fields were opened in the following places: California, Alaska, and Australia.
What and where is the Klondike region? 1514.
Locate the most important gold fields of United States and Canada.

Iron.

I. DESCRIPTION.
  1. Metal.
  2. Mixed with clay, earth, and rock.
  3. Found in sea water and mineral water.
  4. Essential constituent of plants and animals.
  5. Pure metal—Silvery-white, very tenacious, malleable, and ductile.
  6. Commercial product—Derived from ores.
    A. Magnetite.
    B. Hematite.
    C. Limonite.
    D. Siderite.
  7. Compounds.
    A. Sulphur.
    B. Copper.
    C. Silicon.
    D. Carbon.
    E. Arsenic.
    F. Phosphorus, etc.
II. KINDS.
  1. Cast iron.
    A. Commercial iron.
    B. Produced in blast furnace.
    C. Contains much carbon.
    D. Easily cast in molds.
    E. Neither ductile nor malleable.
    F. Pig iron.
      a. Form of cast iron.
      b. Heated metal run into molds called pigs.
  2. Wrought iron.
    A. Fibrous.
    B. Ductile.
    C. Malleable.
    D. Produced in a puddling furnace or forge
    E. Quite pure.
  4. Weld iron, bar iron, steel.
    A. Compounds of iron.
    B. Compare with others.
    C. Can be forged, tempered, and cast.
    D. Hardened by heating to redness and cooling quickly.
III. IRON INDUSTRY.
  1. Mining—Blasting and shoveling.
  2. Transportation—From mines to smelters.
  3. Smelting.
    A. Crushed by rollers.
    B. Heated in furnaces.
    C. Tapped.
    D. Molded.
    E. Cooled.
  4. Manufacture.
    1. Improvements.
      A. Cort.
      B. Dalton.
      C. Bessemer.
IV. HISTORY.
  1. One of the earliest known metals.
  2. Mentioned in Bible.
  3. Represented in Egyptian sepulcher.
  4. Its discovery at Mount Ida.
  5. Deposits of India, Italy, Britain, and Spain.
  6. Discovery of deposits in North Carolina.
  7. Establishing and use of blast furnaces.
V. ITEMS OF INTEREST.
  1. United States ranks first in production of pig iron.
  2. Two-thirds of iron ore is obtained from Lake Superior region.
  3. Pennsylvania leads in the manufacture of iron products.
  4. Minnesota ranks first in the output of iron.
  5. First blast furnace operated under direction of William Penn.
  6. First rolling mill established in 1817, at Plumstock, Pa.

VI. Production and Distribution
  1. World's production in 1908.
    A. United States.
    B. Germany.
    C. Great Britain.
    D. France.
    E. Canada.
    F. Other countries.

VII. Uses.
  1. Machinery.
  2. Utensils.
  3. Tools.
  4. Railroad ties, rails, spikes, etc.
  5. Bridges.
  6. Castings.
  7. Stoves.
  8. Framework of buildings.
  9. Wire and nails.
  10. Medicine, etc.

Questions on Iron.

Name four classes of iron. 1410.

With what metals is iron combined and why?

Describe cast iron. What is pig iron?

What medicinal properties has iron?

Name the leading iron-producing states. In what does Pennsylvania lead?

Why is the iron industry of the Southern States making rapid progress?

Describe the Catalan furnace.

What materials are used for fuel for smelting?

Who is spoken of as "instructor of every artificer of brass and iron"?

How do Canada and the United States rank among the nations in the production of iron?

Name ten things in your home made of some form of iron.

Explain what is meant by the *Iron Age.*

What useful improvements in the iron industry were made by Cort?

Who discovered the method of converting crude iron into steel?

Old Ironsides.

Ay, tear her tattered ensign down!
  Long has it waved on high,
And many an eye has danced to see
  That banner in the sky;
Beneath it rang the battle-shout,
  And burst the cannon's roar;—
The meteor of the ocean air
  Shall sweep the clouds no more!

Her deck, once red with heroes' blood,
  Where knelt the vanquished foe,
When winds were hurrying o'er the flood,
  And waves were white below,
No more shall feel the victor's tread,
  Or know the conquered knee;—
The harpies of the shore shall pluck
  The eagles of the sea!

Oh, better that her shattered hulk
  Should sink beneath the wave;
Her thunders shook the mighty deep,
  And there should be her grave;
Nail to the mast her holy flag,
  Set every threadbare sail,
And give her to the god of storms—
  The lightning and the gale!

—*Holmes.*

Asbestos.

I. Description.
- 1. Composition—Magnesia, lime, iron-oxide.
- 2. Silky mineral fiber.
- 3. Will not burn.
- 4. Some flexible and elastic; others brittle and stiff.

II. Deposits.
- 1. All grand divisions.
  - A. United States.
    - a. Georgia.
      - Sall Mountain—Has ledge 800 feet long, 250 feet wide, and of great depth.
    - b. Montana.
  - B. Canada.
    - a. Pure white.
    - b. Long fibers.
    - c. Can be spun into yarn; made into rope.

III. Classes.
- 1. True asbestos.
  - A. Rock-cork—Soft, light, and easily cut.
  - B. Rock-leather.
  - C. Rock-wood.
- 2. Chrysolite.

IV. Uses.
- 1. Modern.
  - A. Asbestos cement.
  - B. Quick-setting plaster.
  - C. Fireproof roofing, stage curtains, firemen's clothing.
  - D. Deadening walls and floors.
  - E. Sectional coverings for pipes and boilers.
  - F. Insulator in electric mechanisms.
  - G. Fireproof coat in paint.
- 2. Ancient.
  - A. Absorbent in lamp wicking.
  - B. Embalming robes for dead bodies, ashes being thus preserved when body is placed on the funeral pile for cremation.

Questions on Asbestos

Is asbestos an element? Give reasons for your answer.

What is the most valuable property of asbestos?

State several uses of it.

Where is it found most extensively? Compare the American product with that of other parts of the world.

What is known of the deposits in Canada? Name two articles of manufacture made from the Canadian product.

Why is it especially beneficial in making curtains for theaters?

How was this mineral used by the ancients?

What do you know of the extent of the use of asbestos?

> Nought in this life without much toil is bought.
> In this world of ours,
> The path to what we want ne'er runs on flowers.
> —*Horace.*

Alum.

I. History.
II. Classes.
    1. Potassium alum.
    2. Ammonium alum.
    3. Sodium alum.
III. Description.
    1. Double salt.
    2. Constituents.
        A. Alumnia.
        B. Alkali.
            a. With potash.
            b. With ammonia.
            c. With soda.
        C. Sulphuric acid.
        D. Water.
    3. White and stringent.
IV. Kinds.
    1. Natural.
        A. From alum ore.
        B. Found in lower coal measures.
    2. Manufactured.
        A. For commerce.
        B. Burnt alum.
V. Use.
    1. Preparing skins.
    2. Mordant in calico printing.
    3. Glazing paper.
    4. Bread and pastry.
    5. Clarifying liquors.
    6. Harden tallow, fats, etc.
    7. Baking powders.
    8. Medicine.
    9. Arts.

Questions on Alum.

How long has alum been manufactured?

Where was it known and manufactured in the 7th century?

What is the effect of alum applied to the flesh? Would you consider it healthful to use it in whitening bread?

What is burnt alum and for what is it used?

Name the three general classes. Upon what do they depend?

What useful property has it in dyeing?

In what is it used to harden?

Break, Break, Break.

Break, break, break,
On thy cold gray stones, O sea!
And I would that my tongue could utter
The thoughts that arise in me.

O well for the fisherman's boy,
That he shouts with his sister at play!
O well for the sailor lad,
That he sings in his boat on the bay!

And the stately ships go on
To their haven under the hill;
But O for the touch of a vanished hand,
And the sound of a voice that is still!

Break, break, break,
At the foot of thy crags, O sea!
But the tender grace of a day that is dead
Will never come back to me.

—*Tennyson.*

Aluminium.

- I. Discovery.
- II. Description.
  - 1. Metal.
    - A. Qualities.
      - a. Ductile.
      - b. Malleable.
      - c. Sonorous.
    - B. Weight.
    - C. Color.
    - D. With what found.
      - a. Clay.
      - b. Mica.
      - c. Spar, etc.
  - 4. Form.
    - A. Drawn into fine wire thread.
    - B. Rolled into thin foil.
  - 5. Alloyed with copper, steel, etc.
- III. Manufacture.
  - 1. By machinery.
  - 2. Power employed—Electricity.
  - 3. Intense heat required.
- IV. Use.
  - 1. Ornaments.
  - 2. Scientific instruments.
  - 3. Bells.
  - 4. Bicycles.
  - 5. Automobiles.
  - 6. Airships.
  - 7. Bath tubs.
  - 8. Torpedo boats.
  - 9. Stoves.

Questions on Aluminium.

What is aluminium? Should it be classed with the elements?

State a peculiar fact about this metal.

Why has the extensive use of this metal been so recent?

For what articles is it especially adapted, owing to the fact that it does not rust?

How is aluminium made available for use? With what is it alloyed?

What are some of the most recent products made from this metal?

Give two reasons for using aluminium in the manufacture of stoves, bath tubs, airships, and automobiles.

What two reasons can you give for the constant increase in its use?

The Isles of the Blest.

The Isles of the Blest, they say,
  The Isles of the Blest,
Are peaceful and happy, by night and by day,
  Far away in the glorious West.

They need not the moon in that land of delight,
  They need not the pale, pale star;
The sun is bright, by day and night,
  Where the souls of the blessed are.

They till not the ground, they plow not the wave,
  They labor not, never! oh, never!
Not a tear do they shed, not a sigh do they heave,
  They are happy, for ever and ever!

—Pindar.

Salt.

I. Definition.

II. Uses.
   1. Preserver of food.
   2. Seasoning for food.
   3. Uses in chemical and industrial arts.
   4. Mordant.
   5. For glazing coarse pottery.
   6. Giving hardness to soap.
   7. Imparting clearness to glass.

III. Sources.
   1. Ocean water and saline lakes (3%).
   2. Salt rocks.
   3. Springs and wells.

IV. How Obtained in Market.
   1. By evaporating or freezing water from the ocean.
   2. By mining in beds of rock salt.

V. In What Countries Found.
   1. Michigan (Saginaw Bay).
   2. Avery Island, La. (2,000 ft. thick).
   3. Nevada and California.
   4. Canada (Chiefly in Ontario).
   5. Germany (In Brunswick and Hanover).
   6. Russia in Europe (Worked since 12th century).
      a. Crimea.
      b. Caucasus.
   7. China.
   8. Persia.
   9. Sahara.
   10. Various parts of Australia and other arid countries.

VI. Annual Output.
   1. United States, 3,150,170 tons (Exceeds all others).
   2. Canada, 80,000 barrels.

Questions on Salt.

What per cent. of ocean water is salt, by weight? 2507.

What can you say of it as an essential in foods for animals?

What are the chief uses of salt?

Give three sources by which salt is obtained.

What can you say of the salt deposit in the Avery Island region of Louisiana?

What is the annual output of salt in tons for Canada?

What states rank first in the production of salt?

How many pounds of salt for every hundred pounds of water in the Dead Sea? 761.

Why is the Dead Sea so salty?

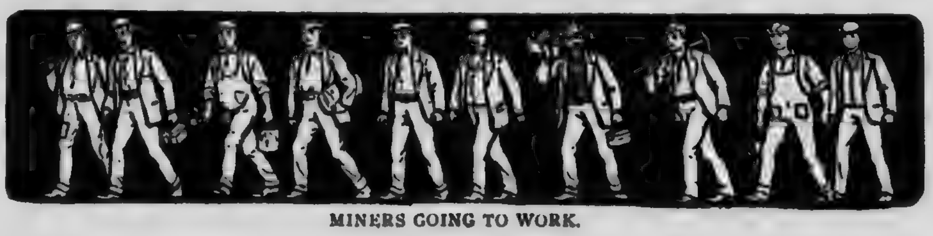
Where is the Salton Sea? 2509.

Speak of the largest salt lake in Turkey; in the United States.

Why dost thou shun the salt? that sacred pledge,
Which once partaken blunts the sabre's edge,
Makes even contending tribes in peace unite,
And hated hosts seem brethren to the sight.
—*Byron.*

Minerals and Mining.

The mining industry is one of the great enterprises. Information on the minerals is found under their appropriate titles, as *Coal, Copper, Diamond, Gold, Iron, Silver,* etc. The student is likewise referred to the subhead *Minerals* under the states, provinces, and leading countries of the world.



MINERS GOING TO WORK.

I. Mining Regions.
  A. 1. Colorado, Ontario, Pennsylvania, etc.
    2. United States.
    3. Canada, Mexico, and Central America.
    4. Map drawing. 1. Outline maps. 2. Chalk modeled maps.
      a. Each country.
      b. Locate mining regions.
      c. Locate mining centers.
    5. Nature and surface of the country in mining regions.
    6. Minerals that are mined in each region.
    7. Amount produced.
    8. Incidentally locate other regions, as agricultural, manufacturing, etc.
  B. 1. Study of South America, Europe, Asia, Africa, and Australia, by outline above.
    2. Compare each continent with the other as to the extent of the mining regions, nature and kind of minerals, and the amount produced or mined.

II. Minerals.
  A. 1. Coal.
    2. Iron.
    3. Lead.
    4. Zinc.
    5. Copper.
    6. Gold.
    7. Silver.
    8. Petroleum.
    9. Stone.
    10. Diamond.
  B. Outline for study of any mineral.
    1. Nature and composition.
    2. Color and weight.
    3. Where found.
    4. How obtained.
      a. Process of mining.
        1. Sinking the shaft.
        2. Digging for the mineral.
        3. Separating it from dirt and other material.
        4. Taking it out of mine.
      b. Preparing mineral for use.
        1. Clearing.
        2. Smelting.
        3. Molding.
        4. Marketing and shipping.
        5. Stamping.
      Give the process in a general way.
        Suggestion: Some minerals are found in the pure state and do not have to be taken through all the above processes.
    5. Use.
    6. Location of mines.
      a. In our own country.
      b. In other countries.
    7. Comparative amounts of production.
      a. In this country.
      b. In other countries.
        Suggestion: Use specimens of minerals, if possible.

Questions on Minerals and Mining.

Of what does the art of mining consist? 1795.

When and by whom was the first exhaustive treatise on mining published?

What inventions have greatly facilitated the mining industry?

Give a list of the most important minerals.

Name some minerals which occur in seams or strata. Which occur in lodes?

For what mineral is each of the following noted: California, Nevada, Pennsylvania, Michigan, Mexico, Ontario, and Yukon?

Where are the most valuable diamond mines? How are diamonds obtained?

Explain how tin ore is prepared for the market.

How is petroleum, or mineral oil, secured? Name some of its products.

Explain how prospecting is done. How are shafts sunk?

Explain the long-wall method of mining coal.

Name some agencies for blasting. Which is used most extensively?

Name and locate some noted schools of mining.

State some benefits of labor unions in connection with the mining industry.

How may mineral titles be secured?

Name the four lines of study into which mining is divided.

Locate the chief mineral fields of Europe. Of South America. Of Australia.

Flint and Steel.

The Flint and Steel—the story goes—
Old friends by natural relation,
Fell out, one day, and like two foes,
Indulged in bitter altercation.

"I'm weary," said the angry Flint,
"Of being beat: 'tis past concealing;
Your conduct (witness many a dint
Upon my sides!) is most unfeeling.

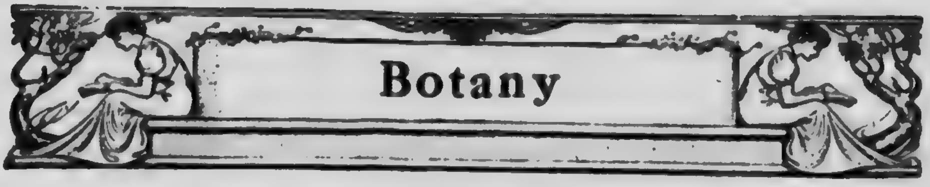
"And what reward have I to show?
What sort of payment do you render
To one who bears each hateful blow
That you may blaze in transient splendor?"

"You seem to think yourself abused,"
The Steel replied with proper spirit;
"But, say, unless with me you're used,
What praise of service do you merit?

"Your worth, as any one may see
(For all your feeling of defiance),
Is simply nought, unless with me
You keep your natural alliance."

"True!" said the Flint; "but there's no call,
Whate'er my worth, for you to flout it;
My value, sir! may be but small;
But think what yours would be without it!"

—*J. G. Saxe.*



Botany

I. DEFINITION. The science that treats of plants—Their structure, the functions of their parts, and the conditions governing their growth.

II. DIVISIONS.

- 1. Structural or morphological—Dealing with plant structure.
- 2. Physiological—Treating of the function and vital action of plants.
- 3. Descriptive or systematic—Relating to classification and arrangement.
- 4. Paleontological—Treating of fossil plants.
- 5. Phanerogams—Flowering plants.
- 6. Cryptogams—Flowerless plants.

III. PLANTS.

- 1. Organs of growth.
  - A. Roots and rootlets.
    - a. Grow downward.
    - b. Gather moisture and nutrition from soil.
  - B. Stems.
    - a. Grow upward.
    - b. Bear leaves.
  - C. Leaves.
    - a. Color—Greenish or brownish.
    - b. Grow mostly from upper part of stem.
    - c. Differ in form and size.
    - d. One side of leaf faces the sky and the other is turned toward ground.
- 2. Subsistence.
  - A. Water.
  - B. Earth.
  - C. Air.
    - a. Assimilated through roots and leaves.
- 3. Necessary elements.
  - A. Light.
  - B. Heat.
  - C. Moisture.

IV. HISTORY.

- 1. Not studied as long as astronomy or geography.
- 2. Taught in time of King Solomon.
- 3. Early botany students.
  - A. Theophrastus—Pupil of Aristotle.
  - B. Diosconides, of Asia Minor.
  - C. Pliny the Elder.
  - D. Otto Brunfels of Germany.
  - E. Linnaeus—Swedish naturalist.
  - F. Bernard Jussieu — French scholar.
  - G. Darwin.

V. CLASSIFICATION.

- 1. Annuals—Live one year.
- 2. Biennials—Live two years.
- 3. Perennials — Live year after year.
- 4. Structure.
  - A. Herbs.
  - B. Undershrubs.
  - C. Shrubs.
  - D. Trees.
- 5. Evergreen—Retain foliage the entire year.
- 6. Deciduous—Shed leaves in the fall.
- 7. Genus — Scientific names of plants.
- 8. Species—More than 120,000.
- 9. Variety—Numerous.

VI.

- 1. Cryptogams.
  - A. Seedless apple.
  - B. Bacteria.
  - C. Diatoms—Microscopic plants.
  - D. Mold—Low type of growth.
  - E. Rust—Fungus growth on cereals and grasses.
  - F. Yeast—Fungus growth.
  - G. Algae—Plants that grow in water.
  - H. Lichens — Sort of fungus growth.

- **I. Mosses—Several thousand species.**
- J. Ferns—4,000 species.
- K. Desmids and pond scums.
- L. Liverworts.
- M. Scouring rushes.
- N. Club mosses.
- O. Fission plants.

- 2. Phanerogams.
  - A. Coniferae—Pine family.
    - a. Pine.
    - b. Spruce.
    - c. Hemlock.
    - d. Fir.
    - e. Larch.
    - f. Tamarack.
    - g. Cypress.
    - h. Arbor Vitae.
    - i. Cedar.
    - j. Juniper.
  - B. Angiosperms.
    - a. Monocotyledons.
      - 1. Cat-tail family.
      - 2. Grass.
      - 3. Sedge.
      - 4. Arum.
      - 5. Spiderwort.
      - 6. Pickerel weed.
      - 7. Rush.
      - 8. Liliaceae (Lily) family.
        - a. Wild oats.
        - b. Wild onion.
        - c. Common tulip.
        - d. White dog-toothed violet.
        - e. Wild hyacinth.
        - f. Star of Bethlehem.
        - g. Asparagus.
        - h. Jacob's ladder.
        - i. Lily-of-the-valley.
        - j. Wake robin.
        - k. Green briar.
      - 9. Amaryllis family.
        - a. Daffodil.
        - b. Star grass.
      - 10. Iris family.
        - a. Crocus.
        - b. Blue flag.
        - c. Fleur-de-lis.
        - d. Yellow flag.
      - 11. Orchis family.
    - b. Dicotyledons.
      - 1. Willow family.
        - a. Poplar.
        - b. Cottonwood.
        - c. Aspen.
        - d. Weeping willow.
      - 2. Walnut family.
        - a. Black walnut, butternut.
        - b. Hickory — Pecan, pignut.
      - 3. Birch family.
        - a. Hazelnut.
      - 4. Beech family.
        - a. Oak — Red, **black**, white, burr.
      - 5. Elm family.
        - a. White elm.
        - b. Slippery elm.
        - c. Hackberry.
      - 6. Mulberry family.
      - 7. Nettle family.
      - 8. Buckwheat family.
        - a. Sheep sorrel.
        - b. Swamp dock.
        - c. Knotgrass.
      - 9. Pink family.
      - 10. Peonia family.
        - a. Marsh marigold.
          - 1. Buttercup.
          - 2. Cowslip.
        - b. Wild columbine.
        - c. Blue larkspur.
        - d. Marsh clematis.
      - 11. Poppy family.
        - a. Dutchman's breeches.
        - b. Bleeding Heart.
        - c. Bloodroot.
      - 12. Mustard family.
        - a. Horse-radish.
        - b. Water cress.
        - c. Shepherd's purse.
      - 13. Rose family.
        - a. Quince, pear, apple, haw.
        - b. Raspberry, mulberry, blackberry, dewberry, strawberry.
        - c. Wild rose, sweetbrier.
        - d. Plum, peach, cherry.
      - 14. Pulse family.
        - a. Honey locust.
        - b. Clover, alfalfa.
        - c. Wistaria.
        - d. Wild pea, sweet pea, peanut.
      - 15. Geranium family.
      - 16. Vine family.
        - a. Grape.
        - b. Boston ivy.
        - c. Virginia creeper.
        - d. Woodbine.
      - 17. Linden family — Basswood.
      - 18. Violet family.
      - 19. Begonia family.

20. Cactus family.
  a. Night-blooming cereus.
21. Primrose family.
22. Ginseng family.
23. Parsley family.
  a. Caraway.
  b. Parsnip.
  c. Carrot.
24. Dogwood family.
25. Heath family.
  a. Wild honeysuckle.
  b. Sheep laurel, trailing arbutus, Mayflower.
  c. Wild rosemary.
  d. Huckleberry, cranberry.
26. Olive family.
  a. Ash.
  b. Common lilac.
27. Gentian family.
28. Milkweed family.
29. Morning-glory family.
30. Phlox family.
31. Borage family.
  a. Common heliotrope.
  b. Bluebells.
  c. Forget-me-not.
  d. Blue thistle.
32. Verbena family.
33. Mint fa [illegible]
  a. Cat [illegible]
  b. Gro [illegible]
  c. Motherwort.
  d. Garden sage.
34. Nightshade family.
  a. Bittersweet.
35. Honeysuckle family.
36. Composite family.
  a. Daisy.
  b. Garden coreopsis.
  c. Mayweed (Dog's fennel).
  d. Marguerite.
  e. Ragweed.
  f. Bachelor's button.
  g. Fall thistle.
  h. Chicory.
  i. Dandelion.
  j. Wild lettuce.

Questions in Botany.

Name three distinguishing features between plants and animals. 346.

Upon what do plants subsist? Name the four main divisions of plants. 2232.

Name three eminent botany students of early days. Who was the first writer of this subject?

Define annual, perennial, dicotyledon, parasite.

What are rust and yeast? How are ferns propagated?

To what family does the apple belong? 120.

By whom was the flowerless, seedless apple evolved? 121.

What beverages are made from grapes, apples, corn, and agave?

From what are asafetida, arnica, and opium made?

State a peculiarity of the eucalyptus tree.

What are sago, palmetto, and caoutchouc?

Name some useful tropical plants.

Describe tobacco, maple, and holly.

How did the name mandrake originate? By what other name is it known?

From what is manilla hemp made? Linseed oil?

What are weeds? How do plants become weeds?

Name several species of oak. What does the name oak signify?

Name some plants noted for their wood.

For what is ginseng used? By whom principally?

To what person and State is the celebration of Arbor day due?

What is an aquarium and for what is it used?

These children of the meadows, born
Of sunshine and of showers.

—*Whittier.*

Flowers.

I. DESCRIPTION.
  1. Parts.
    A. Receptacle, base of flower.
    B. Perianth.
      a. Sepals.
      b. Petals.
    C. Corolla.
    D. Calyx.
    E. Pistils (Female organs).
      a. Ovary.
      b. Ovules.
      c. Stigma.
      d. Style.
    F. Stamens (Male organs).
      a. Filament.
      b. Anther.
      c. Pollen.
  2. Diversities.
    A. a. Hermaphrodite.
      b. Unisexual.
    B. a. Neuter.
      b. Naked.
    C. Sessile.
  3. Inflorescence.
    A. Indeterminate.
      a. Axillary—Red currant.
      b. Raceme—Forget-me-not.
      c. Corymb—Red haw.
      d. Umbel—Carrot.
      e. Spike—Plantain.
      f. Head—Clover.
      g. Panicle—Oats.
    B. Determinate.
      a. Terminal—Basswood.
      b. Cyme—Chickweed.
  4. Reproduction.
    A. Manner.
      a. Transportation of pollen from stamen to pistil.
    B. Agencies.
      a. Insects.
      b. Birds.
      c. Falling of pollen.
      d. Blowing through air.
    C. Best results obtained from fertilization from different flowers of plants of same or similar species.
  5. Variations.
    A. Forms.
    B. Colors.
    C. Construction.

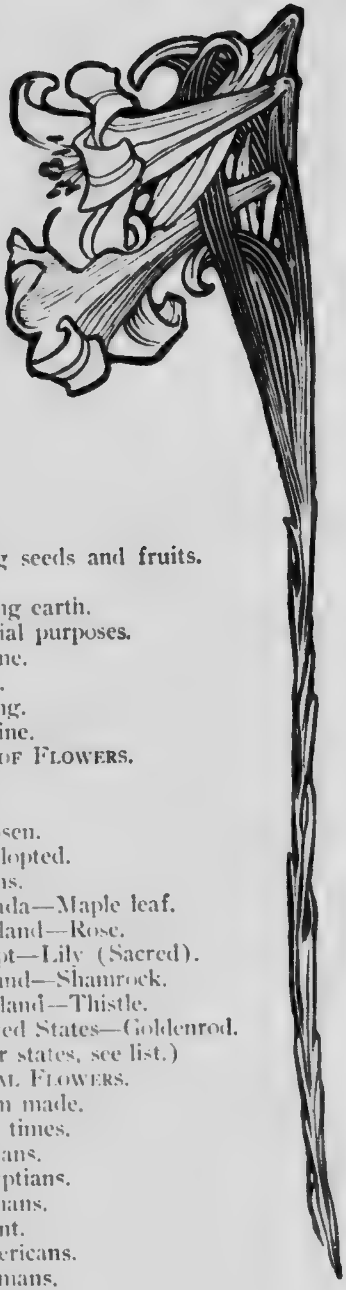
II. FLORICULTURE.
  1. Nurseries.
  2. Landscape gardening.
  3. Conservatories, hothouses, etc.

III. OBJECT.
  1. Producing seeds and fruits.

IV. USES.
  1. Beautifying earth.
  2. Commercial purposes.
    A. Perfume.
    B. Honey.
    C. Coloring.
    D. Medicine.

V. ADOPTION OF FLOWERS.
  1. When.
  2. Why.
  3. How chosen.
  4. Where adopted.
    A. Nations.
      a. Canada—Maple leaf.
      b. England—Rose.
      c. Egypt—Lily (Sacred).
      d. Ireland—Shamrock.
      e. Scotland—Thistle.
      f. United States—Goldenrod. (For states, see list.)

VI. ARTIFICIAL FLOWERS.
  1. By whom made.
    A. Early times.
      a. Italians.
      b. Egyptians.
      c. Romans.
    B. Present.
      a. Americans.
      b. Germans.
      c. French.
  2. Use.
    A. Millinery.
    B. Decorations.



3. Materials.
   - A. Wax.
   - B. Paper.
   - C. Shell.
   - D. Horn.
   - E. Whalebone.
   - F. Rubber.
   - G. Velvet.
   - H. Ribbons, etc.

VII. LANGUAGE OF FLOWERS.

1. Flowers are used as types to express thoughts and feelings.
2. Where developed.
3. By whom.
4. Types in common.
   - A. Amaranth—Immortality.
   - B. Oak leaf—Power.
   - C. Moss rosebud—Confession of love.
   - D. White rosebud—Happy in love.
5. See list.

Questions on Flowers.

Name the principal parts of a flower.

When is a flower said to be perfect? When sessile?

What is pollen and of what use is it? 2262.

State some uses of flowers.

How did the adoption of flowers as emblems come about? 1020.

What flower is considered sacred in Egypt?

How were many of the State flowers selected?

Name the adopted floral emblems in the states of Illinois, New York, California, and Iowa.

Give a list of at least six national flowers.

What flowers last only one day and night? Do flowers generally remain open at night?

What is said to be the most beautiful and fragrant of flowers?

Who were the first to advance the art of making artificial flowers to a more perfect state?

Which nations now excel in this industry? What is the value of the annual export of flowers from Germany and France?

What is meant by flower language?

State the significance of the following: Pansy, laurel, apple blossom, violet, daisy, and goldenrod. 1021.

Who is considered god of flowers?

Flowers in Literature.

Spake full well, in language quaint and olden,
  One who dwelleth by the castled Rhine,
When he called the flowers, so blue and golden,
  Stars, that in earth's firmament do shine.
—*Longfellow.*

In Eastern lands they talk in flowers,
And they tell in a garland their loves and cares;
Each blossom that blooms in their garden bowers
On its leaves a mystic language bears.
—*Percival.*

Gather ye rosebuds while ye may,
  Old Time is still a-flying,
And this same flower that smiles today,
  Tomorrow will be dying.
—*Herrick.*

L I T E R A T U R E

THE fact that poetry preceded prose in the origin of literature indicates the natural desire of mankind for beauty. Poetry is the voice of imagination, of music, of ideals; prose, of the practical affairs of life, of criticism, of the exposition of knowledge. As poetry is to literature, so is literature to education in general: that phase of common school education which arouses the desire for art and gives a finer taste for all that is best in achievement. Prose is to literature what the practical studies of mathematics and sciences are to education. A man's life could never reach its most complete achievement without both, but the natural instinct of man is for the ideal rather than the practical. The centuries when man's natural expression in all literature was in verse proves this. The practical must come, as it did in prose, but the natural desire must be satisfied first or the zest for the practical will be lost. Literature satisfies this natural craving of man; it furnishes the inspiration, the personality of education.

From the time savage man told of his conquests in wild, barbaric verse to the present-day poetry, polished in form and abounding in knowledge, narratives have been told in rhyme. When these stories swung themselves off in ringing stanzas which sing in spite of one's self, they fell easily under the head of *ballads.* But it is in the epics of literature that the more pretentious of these stories come, and the world's greatest writers have used this method of narration. The German *Nibelungenlied,* the Greek *Iliad* and *Odyssey,* and the Anglo-Saxon *Beowulf* are among the most famous examples of the world's early epics. Coming down through the centuries of English literature, it is found that the most profound subject-matter—dramatic, ideal, and sustained—has found its expression in the epics of *Paradise Lost, Faërie Queene,* and *Idylls of the King.* It was not until several centuries of development had passed in the British Isles that the drama found birth through the demand for action in literature. Prose was not developed sufficiently even in the 17th century to furnish an expression for the novel, yet people were eager for stories, and, as the masses could not read, the drama, modified and made more expressive of human character, was drafted into service. The *lyric,* the natural song of the poet's heart, the expression of all the emotions of mankind, has existed always, as the laughter and tears of the world have always existed. These forms, the *ballad,* the *epic,* the *drama,* and the *lyric,* furnish the basis of all poetic forms of expression.

Prose in the early history of the nations was merely the mode of expressing facts. Historical chronicles are the earliest forms of it in Anglo-Saxon prose. The Reformation advanced the clearness of English prose through the argumentation then prevalent. The printing press made it possible to present political and religious views in pamphlets. From that time there was a steady, but slow, growth in prose expression. Humor and nature found their way into the heavy sentences in the latter part of the 17th century. The presence of these elements made the entire prose expression more elastic and variable. The *novel* naturally follows, and critical *essays* developed rapidly as the possibilities of a concise, flexible prose offered themselves to the writers of these centuries. To-day it hardly seems possible that our literature was ever lacking in the many departments which are only possible through prose—those of the essay, the novel, the short story, the oration, and even that of our current periodicals.

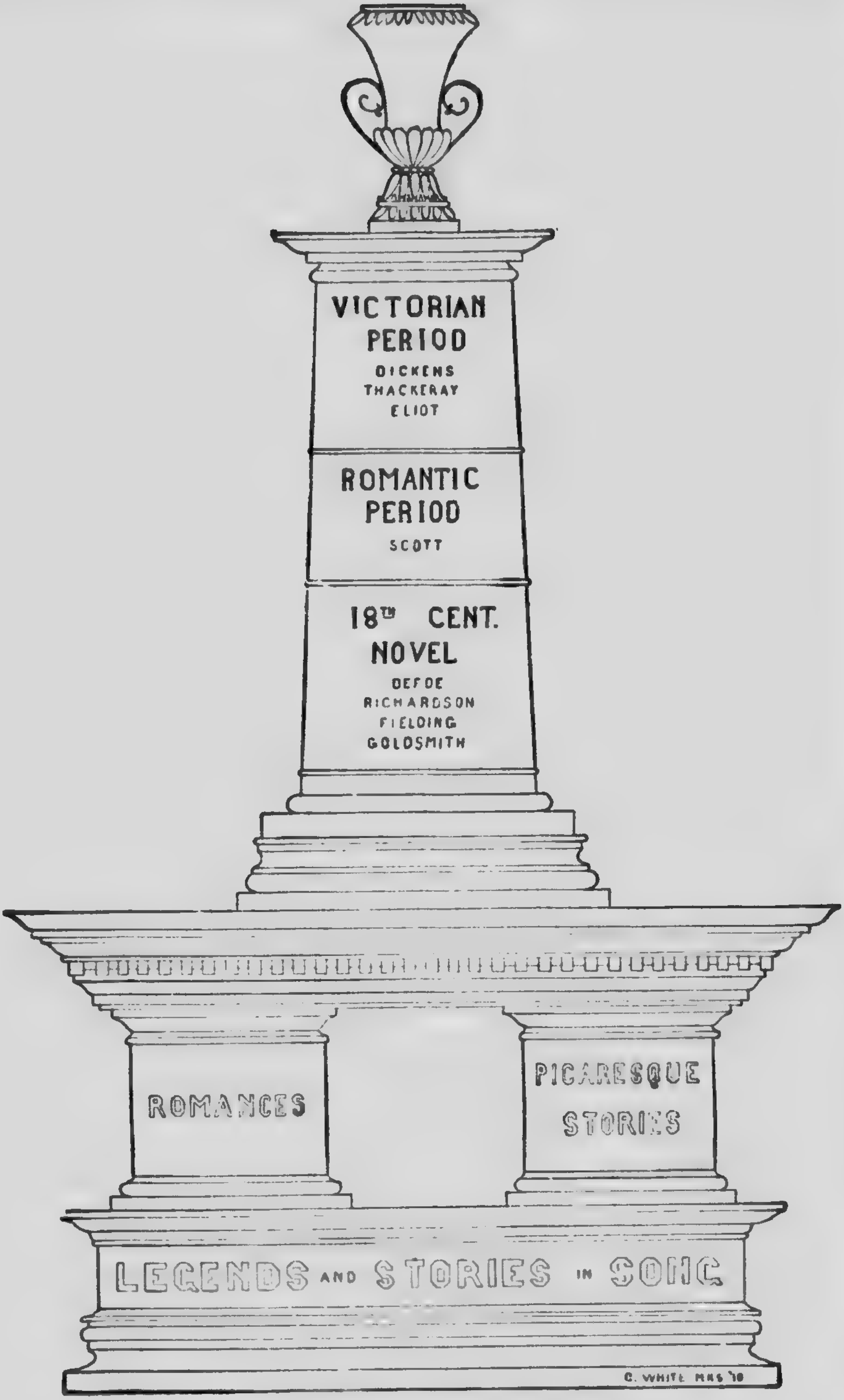
We can scarcely estimate the wealth of our inheritance in literature. Everything of importance in the literature of other ages is ours through translation, added to the magnificent production of our own English-speaking men of letters. The study of it should be an inspiration, not only to greater individual development, but toward that of the natural life as well, through the efforts of our public schools.

Studying Literature.

BOYS and girls of the age to study literature are ready, emotionally, for all that is beautiful in prose and poetry; mentally, they are just at the stage of their development where the realization that they have power to make clear to themselves and others the masterpieces of literature is of the greatest importance. A feeling of power leads to a further desire for new fields of conquest. In no development of school work is this general characteristic of mankind so forcibly evident as in the study of literature. But to develop this trait the pupil must be allowed sufficient freedom for research work, must be given a chance to develop the imitative within him. The teacher must keep in the background, an inspiring and guiding force, but not to take away the zest of discovery from the pupil by giving him what he can find for himself.

No public school course can do more than open the doors to the vast pleasures in literature: but those doors may be opened in such a way that the boys and girls will never care to shut them again—in fact, never can shut them again—against the enjoyment of companionship with the world's greatest men and women. The plan of research and report work through topics assigned by the teacher leaves the pupil the power of imitation within the bounds of his ability.

The outline of literature following this introduction is designed to furnish topics for pupils' work in chronological order, so that a complete history of English and American literature may stand out definitely, as well as the interpretation and detailed study of the individual writers. The reports assigned on these topics are to be presented to the class by the pupil in such a manner that notes can be taken and recited upon. Each writer's characteristics should be proved through the reading of his productions, and definite examples given to illustrate the truth of the subdivisions under that head. This particular part of the outline plan develops true critical ability in reading and brings the boys and girls to realize



PERIODS OF ENGLISH LITERATURE.

their ability to read good books intelligently; having realized this once, literature of a poorer class will lose its attraction, for the poor sentiment, the lack of strength, the bombastic display of rhetoric will appear to them as the toys of their earlier years. Thus there is a possibility here which must appeal to every true teacher: the possibility of removing future failures in the lives of boys and girls, by creating an indifference to all but the best.

English Literature.

Old English of Anglo-Saxon Period (449-1066).

I. HISTORICAL BACKGROUND.
   A. Roman conquest of Britain.
   B. Teutonic conquests.
   C. Introduction of Christianity.
II. FIRST POETRY AND WRITERS.
   A. Scop and Gleeman.
   B. *Beowulf:* greatest Anglo-Saxon epic.
   C. Caedmon and his paraphrase.
   D. The Cynewulf cycle.
   E. Characteristics.
      a. Love of the sea and war.
      b. Background of rugged, stormy land.
      c. Gloom; stern sense of duty.
      d. Rhythm, but no rhyme.
III. PROSE PRODUCTIONS AND WRITERS.
   A. Alfred the Great.
   B. Bede.
   C. Anglo-Saxon Chronicle.

Suggestions for Study and Questions on the Anglo-Saxon Period.

BEOWULF — Read translations in Morley's *English Writers,* and prepare report of characteristics of Anglo-Saxon literature found in the poem. What difference is there in the treatment of nature by the Anglo-Saxon and a writer of to-day? Is there any analogy between the struggles in the poem and the struggles of the Teutons with nature? What knowledge of early customs does the poem give?

How can you account for the fact that poetry precedes prose in its origin ?

What effect did the introduction of Christianity have on the character and literature of the Anglo-Saxons?

What work of this period is similar to *Paradise Lost?*

The Transition Period.

(1066-1400).

I. HISTORICAL BACKGROUND.
   A. Norman Conquest.
   B. The Crusades.
   C. Unsettled conditions of England following Norman Conquest.
   D. Final mingling of Anglo-Saxon and Norman races.
II. GENERAL CHARACTERISTICS OF PERIOD.
   A. No settled language.
   B. A period of lack of productions until the last century.
   C. First productions in English language.

III. Writers.
- A. Prose.
  1. Geoffrey of Monmouth.
  2. Sir John Mandeville.
  3. John Wycliffe.
- B. Poets.
  1. John Gower.
  2. William Langland.
  3. Geoffrey Chaucer.
     - a. Life.
     - b. Minor poems.
       1. *Legend of Good Women.*
       2. *Troylus and Cryseyde.*
       3. *House of Fame.*
     - c. Masterpiece.
       1. *Canterbury Tales.*
          - a. Plan.
          - b. Characteristics of early times.
          - c. Chaucer's characteristics in poems.
     - d. Characteristics of poetry.
       1. Influence of French and Italian literature.
       2. Love of nature.
       3. Breadth of sympathy.
       4. Humor.
       5. Power to tell story in verse.
       6. Portrayal of character.
     - e. Place.
       1. Founder of English language.
       2. Third place among English writers by some critics; fourth by others in poetic ability.
       3. First great English poet in time.

Suggestions and Questions for Study.

Why is this period called the Transition Period?

Why is Monmouth valuable to later writers?

What similarity is there between Mandeville's *Travels* and Swift's *Gulliver's Travels?*

Why is John Wycliffe called the "Morning Star of the Reformation"? On what is Wycliffe's rank as the most important prose writer of the 14th century based?

How does John Gower show the confused state of the English language in his time?

What is the similarity between William Langland's *Piers Plowman* and Bunyan's *Pilgrim's Progress?*

Into what three periods is Chaucer's work divided?

Why does Chaucer's work close the Transition Period?

Read the *Prologue* and the *Knight's Tale* from Dryden's translation of the *Canterbury Tales* and make reports to illustrate Chaucer's characteristics of humor, power of character portrayal, and love of nature. Compare Dryden's translation with the original verse of Chaucer to get the difference between the early and modern English language.

> That noble Chaucer in those former times.
> Who first enriched our English with his rhymes;
> Spoke first in mighty numbers, delving in the mine
> Of perfect knowledge.
>
> —*Wordsworth.*

The Fifteenth Century.

A Period of Literary Depression.

I. HISTORICAL BACKGROUND.
  - A. War of Roses.
  - B. Discovery of America.
  - C. Introduction of printing.
  - D. Capture of Constantinople.

II. GENERAL CHARACTERISTICS.
  - A. Reaction against chivalry.
  - B. Lack of freedom of thought.
  - C. Lack of high ideals in education.
  - D. Ballad singing.

III. LITERATURE.
  - A. Prose.
    - 1. Thomas Malory's *Morte d'Arthur.*
    - 2. William Tyndale's Translation of the Bible.
      - a. Very similar to present version.
      - b. Clearness of prose expression advanced.
    - 3. Robert Ascham's *School-master.*
  - B. Poetry.
    - 1. Scottish ballads by William Dunbar.
    - 2. Review of old songs: *Robin Hood; Chevy Chase.*
    - 3. Introduction of Italian sonnet form by Wyatt and Surrey.

English as Written in the 15th Century.

Sir Percival.

But this knyght that foughte with Syre Percyval was a proved knyght and a wyse fyghtinge knyghte, and Syre Percyvale was yonge and stronge, not knowying in fyghtying as the other was. Thenne Syre Percyval spake fyrste and sayd syre knyght hold thy hand a whyle stille, for we have foughten for a symple mater and quarel over longe, and therefore I requyre thee tell me thy name, for I was never or this tyme matched. Soo god me help, sayd that knyghte that wounded me soo sore as thow hast done, and yet have I foughten in many batails, and now shalt thow wete that I am a knyghte of the table round, and my name is Syre Ector de Marys broder unto the good knighte Syre Launcelot du Lake. Allas said Syre Percyval and my name is Syre Percyval de Galys that hath made my quest to seke Syre Launcelot, and now I am seker that I shall never fynysshe my quest, for ye have slayne me with your handles. It is not soo said Syre Ector, for I am slayne by yoore handes, therefore I requyre you ryde ye here by to a pryory, and brynge me a preest that I may receyve my Saveour, for I may not lyve. Alas said Syre Percyval that never will be, for I am so faynte for bledyne that I maye unnethe stande, how shold I thenne take my hors.

—*Thomas Malory.*

Test Questions.

What makes this period one of importance to English literature in spite of the lack of productions?

Can you see any reason why the use of gunpowder necessitated a change in the subject-matter of romance?

What effect does a civil war have on the literary production of the country during the time it is in progress? Apply your answer to the case of England during the War of the Roses.

The events enumerated in the historical background of the period are among the reasons why the Elizabethan period was one of such remarkable literary brilliancy. Why did they not have the same effect on the period in which they occurred?

Of what value was the capture of Constantinople to literature?

Read the ballads: *A Lyteel Geste of Robyn Hood, Robyn Hood's Death and Burial, The Nut-Brown Maid.*

Age of Elizabeth.

(1558-1625).

Climax of Greatness in English Literature.

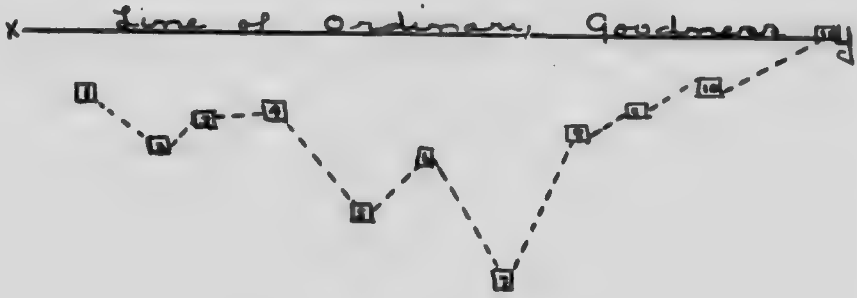
- I. HISTORICAL BACKGROUND.
  - A. Exploration and settlement of the New World.
  - B. Gradual development of Puritanism.
  - C. Defeat of the Spanish Armada.
  - D. Reign of Elizabeth.
  - E. Reign of James I. (first of Stuart kings).
- II. INFLUENCES GIVING RISE TO GREATNESS OF LITERATURE.
  - A. Liberal intelligence of Elizabeth.
  - B. Combined effects of Renaissance and Reformation.
  - C. Imagination aroused by stories of New World.
  - D. Rise of middle class.
  - E. Greater use of printing press.
- III. GENERAL CHARACTERISTICS OF LITERATURE.
  - A. Strong imagination.
  - B. Youthful enthusiasm.
  - C. Love of adventure.
  - D. Love of nature.
  - E. Variety of subject-matter.
  - F. Dramatic expression.
  - G. Extravagant decoration.
- IV. PRODUCTION.
  - A. Prose.
    - 1. Philip Sidney.
    - 2. Richard Hooker.
    - 3. Francis Bacon.
      - a. Life.
      - b. Works.
        - 1. Essays on all subjects.
        - 2. Scientific and historical.
      - c. Literary characteristics.
        - 1. Clear, concise sentences.
        - 2. Breadth of knowledge.
        - 3. Figures drawn from court life.
        - 4. Interest.
  - B. Poetry.
    - 1. Nondramatic.
      - a. Edmund Spenser.
        - 1. Life.
        - 2. Works.
          - a. Minor poems.
            - 1. *Shepherd's Calendar.*
            - 2. *Epithalamium.*
          - b. Masterpiece.
            - 1. *Faërie Queene.*
              - a. Place.
              - b. Style.
              - c. Rank.

Thanks to the human heart by which we live,
  Thanks to its tenderness, its joys, and fears,
To me the meanest flower that blows can give
  Thoughts that do often lie too deep for tears.
—*Wordsworth.*

Graphic of Gertrude's Character.

Edith Ayres.

Shakespeare's Hamlet.



Key to Graphic.

1 = Beginning of play.
2 = First speech to Hamlet (p. 33).
3 = Affection for Hamlet.
4 = Affection for Hamlet.
5 = Lack of feeling for King Hamlet.
6. = Affection for Hamlet.
7 = Play scene.
8 = Closet scene.
9 = Affection for Hamlet.
10 = Ophelia's death and burial.
11 = Death.

BLACKBOARD LESSON.

- c. Characteristics.
  - 1. Melody.
  - 2. High ideals.
  - 3. Absolute expression.
  - 4. Influence on other poets.
  - 5. Spenserian stanza.
- b. Large number of writers of lyrics used sonnets.

2. Dramatic.
   - a. Thomas Sackville.
   - b. Christopher Marlowe.
     - 1. Life.
     - 2. Works.
       - a. Example of greed for money.
         - 1. *The Jew of Malta.*
       - b. Example of greed for knowledge.
         - 1. *Dr. Faustus.*
       - c. Example of greed for conquest.
         - 1. *Tamburlaine the Great.*
     - 3. Characteristics.
       - a. Extravagant imagination.
       - b. Extreme types in character.
       - c. Youthful enthusiasm.
       - d. Highly decorated expression.
     - 4. Influence.
       - a. Made blank verse variable and flexible, to suit subject-matter.
       - b. Shakespeare adopted his new form.
   - c. William Shakespeare.
     - 1. Life.
     - 2. Work.
       - a. Nondramatic.
         - 1. *Venus and Adonis.*
         - 2. *Lucrece.*
         - 3. 150 sonnets.
       - b. Characteristics of nondramatic poems.
         - 1. Subject-matter—Love and nature.
         - 2. Exquisite expression in sonnet form.
       - c. Rank of nondramatic work.
         - 1. Would have placed Shakespeare among the first poets of the world.
       - d. Dramatic—According to periods of life.
         - 1. Youthful, hopeful period.
           - a. *Comedy of Errors.*
           - b. *Midsummer Night's Dream.*
           - c. *Romeo and Juliet.*
           - d. *Richard II.* and *III.*
         - 2. Deeper insight, deeper philosophy, better plot.
           - a. *As You Like It.*
           - b. *Merchant of Venice.*
           - c. *Henry IV.* and *Henry V.*
         - 3. Disappointment, sorrow, weakened faith.
           - a. *Hamlet.*
           - b. *Julius Caesar.*
           - c. *Othello.*
           - d. *Macbeth.*

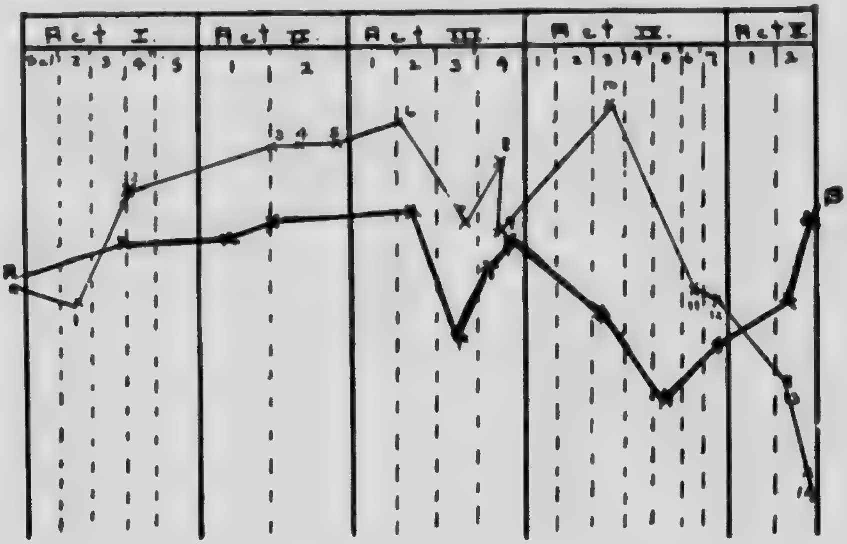
      4. Closing years—Faith and strength.
        a. *Cymbeline.*
        b. *The Tempest.*
    e. Plot.
      1. Material.
        a. From old English chronicles.
        b. From Plutarch's *Lives.*
        c. Miscellaneous manuscript.
      2. Treatment in general.
        a. Act. I.
          1. Introduction of main character.
          2. Previous history.
          3. Purpose and plan of hero.
          4. Background.
        b. Act II.
          1. Development of hero's purpose.
          2. Introduction of opposition active.
          3. Introduction of minor lines of actions.
        c. Act III.
          1. Climax.
        d. Act IV.
          1. Decline of opposition.
          2. Progress of hero's plan.
        e. Act V.
          1. Conclusion.
    f. General characteristics.
      1. Sympathy with all classes.
      2. Love of nature.
      3. Humor.
      4. Mixture of comedy and tragedy.
      5. Command of vocabulary.
      6. Imagery.
    g. Rank.
      1. First of all times and nations.
d. Ben Jonson.
  1. Life.
  2. Works.
    a. Prose.
      1. Critical essays.
    b. Poetry.
      1. Nondramatic.
        a. Lyrics.
      2. Dramatic.
        a. *The Silent Woman.*
        b. *Volpone.*
        c. *The Alchemist.*
        d. *Masques.*
  3. Characteristics.
    a. Display of technical knowledge.
    b. Lack of sympathy.
    c. Satire.
    d. Vigorous critical power.
    e. Exquisite lyrical expression.
e. Beaumont and Fletcher.
f. John Webster.

Hope, for a season, bade the world farewell,
And freedom shriek'd, as Kosciusko fell.
—*Campbell.*

Graphic of the Plot.

Edith Ayres

Shakespeare's Hamlet.



Key to the Chart.

A - B = Main Action.

Characters - Hamlet and Horatio.

1 = Meets the ghost.

2 = Means to avenge father's death.

3 = Gets companions to swear silence.

4 = Gives play.

5 = Loses chance to kill King.

6 = Hamlet talks with his mother.

7 = Kills Polonius.

8 = Goes to England.

9 = "My thoughts be bloody or be nothing worth."

BLACKBOARD LESSON.

10 = Returns from England.
11 = Death of the Queen.
12 = Hamlet kills the King.

C-D = Opposition action.

Characters - King, Polonius, Rosencrang, Guildenstern, Laertes, Ophelia, Queen in first half.

1 = King gains good will of people.
2 = Promise of Ophelia to obey father.
3 = Ophelia tells of meeting with Hamlet.
4 = King plans with Rosencrang and Guildenstern.
5 = Plan for Hamlet to meet Ophelia.
6 = King proposes to send Hamlet to England.
7 = King shows quiet at the play.
8 = Failure of Hamlet to kill King.
9 = Queen's promise to Hamlet.
10 = Hamlet starts to England.
11 = Hamlet changes letters.
12 = King receives letters from Hamlet.
13 = Fencing between Hamlet and Laertes.
14 = Death of the King.

BLACKBOARD LESSON.

Questions and Suggestions for Elizabethan Age.

Spenser is called a subjective poet. Explain.

What is an allegory? Illustrate by *Faërie Queene.*

Define the Spenserian stanza from the use in the *Faërie Queene.* See Byron's *Childe Harold* for more modern use of this verse form.

What is a sonnet? Illustrate from Shakespeare.

Define a lyric. Select examples from Ben Jonson's work and from those thrown into Shakespeare's plays.

What contrast in the characters of Jonson and Shakespeare can be seen from the literary characteristics of the two?

What is satire? Why is it detrimental to good literature?

Did the change in the royal family ruling in England have anything to do with the decline of literature in the latter part of this period?

SHAKESPEARE: Read a play from each of the periods of Shakespeare's life and trace the influence of events in each. Outline a play to illustrate the plot formation as shown under the head, "Treatment in General," in the outline. Make a list of references, as you read, to illustrate Shakespeare's characteristics.

For what is Sidney famous in the history of prose development? Hooker?

Puritan Age (1625-1660).

- I. HISTORICAL BACKGROUND.
  - A. Conflict between Cavaliers and Puritans.
  - B. Civil war.
  - C. Commonwealth.
- II. EFFECT OF STRUGGLE ON LITERATURE.
  - A. Period of argumentation.
  - B. Prose, rather than poetical, development.
  - C. Religious fervor.
  - D. Lack of originality.
- III. LITERATURE.
  - A. Prose.
    - 1. Jeremy Taylor.
    - 2. Izaak Walton.
    - 3. Thomas Hobbes.
    - 4. John Milton.
    - 5. Sir Walter Raleigh.
    - 6. Lord Clarendon.
    - 7. Thomas Fuller.
  - B. Poetry.
    - 1. Caroline or Cavalier School.
      - a. Writers.
        - 1. Abraham Cowley.
        - 2. Robert Herrick.
      - b. Characteristics.
        - 1. Light subject-matter.
        - 2. Extensive decoration.
        - 3. Lyric.
    - 2. John Milton.
      - a. Life.
      - b. Poetry.
        - 1. Minor poems.
          - a. *L'Allegro.*
          - b. *Il Penseroso.*
          - c. *Comus.*
          - d. *Lycidas.*
          - e. *Sonnets.*
        - 2. Later and more important poems.
          - a. *Samson Agonistes.*
          - b. *Paradise Regained.*
          - c. *Paradise Lost.*
      - c. Character of work.
        - 1. Melody.
        - 2. Majesty.
        - 3. Vivid imagination.
        - 4. Beauty.
        - 5. Polished verse form.
        - 6. Figurative.
      - d. Rank.
        - 1. Second to Shakespeare

Questions and Suggestions for Study.

Why was the drama neglected in this period?

Give the particular line of prose development for which each of the writers stand.

Can you see why the Cavalier school would rebound from the general characteristics of the period?

Compare the practical business ability of Shakespeare, Milton, and Chaucer.

What is a masque? *Comus* is claimed to be the greatest in the English language. Read it and make a list of points to prove the place it holds.

Learn Milton's *Ode to Blindness*, and explain how it illustrates his character.

What possibilities in Milton's life are indicated by *L'Allegro* and *Il Penseroso?*

Paradise Lost: Tell the story of the writing of the poem: the first six lines of Book I., give the subject-matter and tell the purpose; learn both. Why is this an epic poem? Why did Milton write *Paradise Regained?* How does it compare with *Paradise Lost?*

What influence has Milton had on theology?

Milton called his prose his *left hand.* Explain.

Learn Milton's definition for education in his article on Education.

Restoration Period (1660-1700).

I. HISTORICAL BACKGROUND.
  A. Restoration of Stuarts to throne.
  B. Revolution of 1688.
II. CHARACTERISTICS OF LITERATURE.
  A. Low moral standard.
  B. Omission of nature reference and background.
  C. Increase of scientific knowledge.
  D. French influence.
  E. Attention to verse form rather than subject-matter.
III. WRITERS.
  A. John Bunyan.
    1. Life.
    2. Works.
      a. *Life and Death of Mr. Badman.*
      b. *Holy War.*
      c. *Pilgrim's Progress.*
    3. Characteristic of style.
      a. Simple words.
      b. Vivid imagination.
      c. Dramatic action.
      d. Sincerity.
  B. John Dryden.
    1. Life.
    2. Works.
      a. Prose.
        1. Critical essays.
      b. Poetry.
        1. Plays.
          a. *All for Love.*
        2. Satirical poems.
          a. *Absalom and Achitophel.*
          b. *Mac Flecknoe.*
          c. *Hind and Panther.*
        3. Odes.
          a. *Alexander's Feast.*
          b. *To Saint Cecilia's Day.*
        4. Translations.
          a. *Virgil.*
          b. *Chaucer.*

- **c.** Characteristics.
    - 1. Prose.
        - a. Short, precise sentences.
        - b. Keen critical power.
    - 2. Poetry.
        - a. Lack of sympathy.
        - b. Vigor.
        - c. Didactic subject-matter.
        - d. Polished verse form.

Suggestions and Questions.

Which of Shakespeare's plays has the same historical basis as *All for Love?* Comparing the characteristics of the two poets, what conclusion do you reach with regard to the merit of the plays?

Define didactic poetry. Is Dryden's didacticism the same as that of our American poets of the New England group?

Why does John Bunyan seem out of place in his period?

Pilgrim's Progress: Give form and subject-matter. What is the reason that this, next to the Bible, has been the most widely read book in the English language?

Classical Period (1700-1740).

- I. HISTORICAL BACKGROUND.
    - A. Reign of Queen Anne, George I., and George II.
- II. CHARACTERISTICS OF PERIOD.
    - A. Low moral standard.
    - B. Lack of originality.
    - C. Perfect verse form.
    - D. Satire.
- III. WRITERS.
    - A. Prose.
        - 1. Daniel Defoe.
        - 2. Jonathan Swift.
            - a. Life.
            - b. Work.
                - 1. *Tale of a Tub.*
                - 2. *Gulliver's Travels.*
            - c. Characteristics of work.
                - 1. Satirical humor.
                - 2. Lack of pathos.
                - 3. Simple, direct style.
        - 3. Joseph Addison and Richard Steele.
            - a. Lives.
            - b. Chief work: *Sir Roger de Coverly Popes.*
            - c. Characteristics of work.
                - 1. Addison.
                    - a. Kindly humor.
                    - b. Smooth, elegant sentence.
                - 2. Steele.
                    - a. Strength and pathos.
                    - b. Carelessness in sentence structure.

- B. Poetry.
  - 1. Alexander Pope.
    - a. Life.
    - b. Work.
      - 1. Translation of Virgil and Homer.
      - 2. *Essay on Man.*
      - 3. *Rape of the Lock.*
      - 4. *Essay on Criticism.*
      - 5. *The Dunciad.*
    - c. Characteristics of work.
      - 1. Lack of imagination and emotion.
      - 2. Subject-matter sacrificed to verse form.
      - 3. Rhyming couplet at its climax.
      - 4. Leader of satiric didactic poetry.

Questions and Suggestions.

What were the *Tattler* and *Spectator?* What in American literature compares with them?

Contrast the humor of Addison and Swift.

Why is this period sometimes called the Age of Pope?

What is the classical couplet? Why is it sometimes called the *rocking-horse couplet?*

Read enough of Pope's poems to be familiar with his verse form and to illustrate his characteristics.

Preparation for Romantic Period.

(1740-1780).

- I. HISTORICAL BACKGROUND.
  - A. American Revolution.
  - B. Reforms in government and political views.
- II. CHARACTERISTICS.
  - A. Return of religious enthusiasm.
  - B. Revival of dramatic tastes.
  - C. Indications of great freedom of thought.
  - D. Rise of novel.
- III. LITERATURE.
  - A. Foundation Work for Romantic Period.
    - 1. Thomas Gray.
    - 2. James Macpherson.
    - 3. Horace Walpole.
    - 4. Thomas Percy.
    - 5. Oliver Goldsmith.
      - a. Life.
      - b. Work.
        - 1. Prose.
          - a. *Vicar of Wakefield.*
        - 2. Poetry.
          - a. *The Deserted Village.*
          - b. *She Stoops to Conquer.*
      - c. Characteristics.
        - 1. Quaint, analytical prose style.
        - 2. Humor.
        - 3. Mixture of classical and romantic characteristics.
        - 4. Good plot and active in drama.
  - B. First English novel writers.
    - 1. Samuel Richardson.
      - a. Life.

- b. Work.
  - 1. *Pamela.*
  - 2. *Clarissa Harlowe.*
  - 3. *Sir Charles Grandison.*
- c. Characteristics of work.
  - 1. Tediousness.
  - 2. Narrow views.
  - 3. Interest in characters.

2. Henry Fielding.
   - a. Life.
   - b. Work.
     - 1. *Joseph Andrews.*
     - 2. *Tom Jones.*
     - 3. *Amelia.*
   - c. Characteristics of work
     - 1. Humor.
     - 2. Perfection of plot.
     - 3. Vigorous characterization.
3. Tobias Smollett.
4. Laurence Sterne.

C. Miscellaneous prose writers.
1. David Hume.
2. Edward Gibbon.
3. Edmund Burke.
4. Samuel Johnson.
   - a. Life.
   - b. Work.
     - 1. *Essays.*
     - 2. *Rasselas.*
     - 3. *Lives of Poets.*
   - c. Characteristics of writing.
     - 1. Elaborate manner of expression.
     - 2. Philosophical.
     - 3. No imaginative coloring.
     - 4. Strength.

D. Dramatic writers.
1. Richard Sheridan.
2. Oliver Goldsmith.

Questions and Suggestions.

Where did Macpherson and Thomas Percy get material for their work?

How does the *Deserted Village* show the mixed characteristics of the classical and romantic writers?

Who is called the inventor of the English novel?

Why is Henry Fielding considered the greatest novelist of the 18th century? What is his masterpiece?

What friend of Johnson's became famous through writing his biography?

What famous club was formed in London in 1764? Name the important members.

On what quality does Johnson's fame rest?

What is the difference between a romance and a novel?

What is the meaning of the term "Picaresque" in connection with story-writing?

Romantic Period.

- I. HISTORICAL BACKGROUND.
  - A. French Revolution.
  - B. Effect of American Revolution.
  - C. Time of peace in England.
- II. CHARACTERISTICS OF ROMANTICISM.
  - A. The opposite of matter-of-fact.
  - B. Deep feeling.
  - C. Love of nature, especially wild nature.
  - D. Democracy.
  - E. Use of supernatural in subject-matter.
  - F. Love of adventure and mystery.
  - G. Beauty of thought and expression
- III. WRITINGS.
  - A. Prose writers.
    - 1. Charles Lamb.
    - 2. Thomas De Quincey.
    - 3. Walter Savage Landor.
    - 4. Jane Austen.
  - B. Writers of both prose and poetry.
    - 1. Sir Walter Scott.
      - a. Life.
      - b. Works.
        - 1. Poetry.
          - a. *Minstrelsy of Scottish Border.*
          - b. *Lay of the Last Minstrel.*
          - c. *Marmion.*
          - d. *Lady of the Lake.*
        - 2. Prose.
          - a. History.
            - 1. *Life of Napoleon.*
            - 2. *Tales of a Grandfather.*
          - b. Fiction.
            - 1. *Ivanhoe.*
            - 2. *Heart of Midlothian.*
            - 3. *Kenilworth.*
            - 4. *Bride of Lammermoor*, etc.
          - c. Characteristics.
            - 1. Mystery.
            - 2. Adventure.
            - 3. Energy.
            - 4. Love of wild nature.
            - 5. Love of supernatural.
            - 6. Return to past for subject-matter.
    - 2. Samuel Taylor Coleridge.
      - a. Life.
      - b. Works.
        - 1. Poetry.
          - a. *Christabel.*
          - b. *Kubla Khan.*
          - c. *The Ancient Mariner.*
        - 2. Prose.
          - a. Biography.
          - b. Lectures and notes on Shakespeare.

- c. Characteristics.
  - 1. Supernatural.
  - 2. Brilliant color.
  - 3. Beauty in ideals.
  - 4. Keenness of critical judgment.

C. Poets.

- 1. Robert Burns.
  - a. Life.
  - b. Works.
    - 1. Individual poems.
      - a. *Cotter's Saturday Night.*
      - b. *Tam O'Shanter.*
    - 2. Songs and lyrics.
  - c. Characteristics.
    - 1. Love of simple nature.
    - 2. Humor.
    - 3. Sympathy.
    - 4. Sincerity.
    - 5. Originality.
    - 6. Master of lyrical expression.
    - 7. Use of Scottish dialect.
- 2. William Wordsworth.
  - a. Life.
  - b. Poetry.
    - 1. Long poems.
      - a. *The Prelude.*
      - b. *Michael.*
      - c. *Excursion.*
    - 2. Other famous poems.
      - a. *Ode to Duty.*
      - b. *Intimations of Immortality.*
      - c. *Solitary Reaper.*
      - d. *Daffodils.*
      - e. *She Was a Phantom of Delight.*
      - f. *Odes.*
  - c. Characteristics.
    - 1. Meditation.
    - 2. Sympathy with lowly life.
    - 3. Extreme love of quiet, simple nature.
    - 4. Strength.
    - 5. Simplicity.
  - d. Rank.
    - 1. Third among English poets.
- 3. Lord Byron.
  - a. Life.
  - b. Poems.
    - 1. *Prisoner of Chillon.*
    - 2. *Manfred.*
    - 3. *Cain.*
    - 4. *Childe Harold's Pilgrimage.*
    - 5. *Vision of Judgment.*
    - 6. *Don Juan.*
  - c. Characteristics.
    - 1. Rebellion against all law.
    - 2. Force.
    - 3. Emotion.
    - 4. Keen, cynical wit.
    - 5. Half pity.
    - 6. Lack of restraint in verse form.

4. Percy Bysshe Shelley.
    - a. Life.
    - b. Poems.
        1. *Prometheus Unbound.*
        2. *The Cenci.*
        3. *Adonais.*
        4. *Songs and Odes.*
    - c. Characteristics.
        1. Pure love of freedom.
        2. Idealization of nature.
        3. Fragile beauty.
        4. Harmony.
        5. Lyrical power.
5. John Keats.
    - a. Life.
    - b. Poems.
        1. *Endymion.*
        2. *Lamia.*
        3. *Isabella.*
        4. *Eve of Saint Agnes.*
        5. *Hyperion.*
        6. Shorter poems and odes.
    - c. Characteristics.
        1. Mediaeval subject-matter.
        2. Appeal to senses.
        3. Youthful enthusiasm.
        4. Beauty.
        5. Musical verse.

Questions and Suggestions.

What is found in the characteristics of the different writers to show the influence of the French Revolution? How many of the writers contemplated active service in the Revolution?

What writer of this period made the English Lake District famous?

How did Burns establish a national spirit in Scottish poetry? Why did he accomplish more in that line than Scott? Read Burns' *A Man's a Man for a' That* and explain how it expresses the democratic feeling of the period. Read *A Mountain's Daisy* and show what characteristics it illustrates. *Tam O' Shanter* is considered Burns' best poem by many. Does it appeal to you so?

How did Scott's life and ancestors furnish material for his work? Illustrate Scott's characteristics by references to *Ivanhoe* and *Lady of the Lake*. Why did Scott give up writing poetry?

Why is the *Ancient Mariner* illustrative of Coleridge's love of the supernatural? Of color?

How does Wordsworth's *Michael* illustrate his love of lowly life? Read *A Solitary Reaper* for exquisite thought and musical expressions; *Daffodils* for extreme love of nature. Why does Wordsworth rank third in English literature?

What points of similarity do you find in the lives of Byron, Shelley, and Keats? In their characteristics? Read *To a Cloud, Eve of Saint Agnes,* and *Prisoner of Chillon.*

What American writers were living and writing at this period?

Victorian Period.

- **I.** HISTORICAL BACKGROUND.
  - A. Period of invention.
  - B. Period of theological and scientific investigation.
- II. GENERAL CHARACTERISTICS.
  - A. Mixture of scientific and imaginative subject-matter.
  - B. Desire for truth.
  - C. Analysis of motives.
  - D. High ideals.
  - E. Struggles in religious faith.
  - F. Variety of production.
- III. WRITERS.
  - A. Thomas Macaulay.
    - 1. Life.
    - 2. Work.
      - a. Poetry.
        - 1. *Lays of Ancient Rome.*
      - b. Prose.
        - 1. *History of England.*
        - 2. *Essays.*
    - 3. Characteristics.
      - a. Clearness.
      - b. Energy.
      - c. Brilliancy.
      - d. Practical views.
  - B. Thomas Carlyle.
    - 1. Life.
    - 2. Work.
      - a. *Translations.*
      - b. *Life of Schiller.*
      - c. *Life of Burns.*
      - d. *Sartor Resartus.*
      - e. *French Revolution.*
      - f. *Oliver Cromwell.*
      - g. *Frederick the Great.*
      - h. *Heroes and Hero Worship.*
    - 3. Characteristics.
      - a. Satire mixed with sympathetic interest.
      - b. Philosophy.
      - c. Sincerity.
      - d. Force.
      - e. Figurative expression.
  - C. John Ruskin.
    - 1. Life.
    - 2. Works.
      - a. *Essays on Art.*
      - b. *Essays on Morals.*
      - c. *Essays on Social Reform*
    - 3. Characteristics.
      - a. Love of nature.
      - b. Imagery.
      - c. Musical sentences.
      - d. Clearness.
      - e. Sincere purpose.
      - f. Breadth of knowledge.
  - D. Matthew Arnold.
    - 1. Life.
    - 2. Work.
      - a. Poetry.
        - 1. *Sohrab and Rustum.*
        - 2. Lyrics, elegies, sonnets.
      - b. Prose.
        - 1. Literary criticisms.
        - 2. Theological discussions.
        - 3. Essays on social questions.
    - 3. Characteristics.
      - a. Poetry.
        - 1. Reflection.
        - 2. Lack of hope.
        - 3. Religious doubt.
        - 4. Love of sea.
        - 5. Irregularity of verse form.
      - b. Prose.
        - 1. Easy, conversational style.
        - 2. Clearness.
        - 3. Unprejudiced criticisms.
        - 4. Plea for culture.
  - E. George Eliot.
    - a. Life.
    - b. Work.
      - 1. Poetry.
        - a. *Spanish Gypsy.*
        - b. Shorter poems.
      - 2. Novels.
        - a. Based on early life and associations.
          - 1. *Adam Bede.*
          - 2. *Silas Marner.*
          - 3. *Mill on the Floss.*
          - 4. *Scenes from Clerical Life.*
        - b. Foreign background.
          - 1. *Romola.*
        - c. Marking decline in power.
          - 1. *Middlemarch.*
          - 2. *Daniel Deronda.*
    - c. Characteristics.
      - 1. Analysis of character.
      - 2. Didactic purpose.
      - 3. Development of character with circumstances.
      - 4. Originality.
      - 5. Clearness and force.
      - 6. Humor.
  - F. Charles Dickens.
    - 1. Life.
    - 2. Works.
      - a. *Pickwick Papers.*
      - b. *Oliver Twist.*

        - c. *Tale of Two Cities.*
        - d. *David Copperfield.*
    - 3. Characteristics.
        - a. Vigorous, clear style.
        - b. Sympathy with lower classes.
        - c. Mixtures of humor and pathos.
        - d. Vanity of character.
        - e. Vivid imagination.
- G. William Makepeace Thackeray.
    - 1. Life.
    - 2. Work.
        - a. Essays.
        - b. Novels.
            - 1. *Vanity Fair.*
            - 2. *Henry Esmond.*
            - 3. *Newcomers.*
            - 4. *Pendennis.*
            - 5. *Virginians.*
    - 3. Characteristics.
        - a. Satire mixed with tenderness.
        - b. Realism.
        - c. Portrayal of society life.
        - d. Quaint, fresh style.
- H. Robert Browning.
    - 1. Life.
    - 2. Poetry.
        - a. Monologues.
            - 1. My *Lost Duchess.*
            - 2. *Andrea del Sarto.*
            - 3. *Abt Vogler.*
        - b. Dramas.
            - 1. *Stafford.*
            - 2. *Blot on the Scutcheon.*
            - 3. *Pippa Passes.*
        - c. Narrative poems.
            - 1. *Saul.*
            - 2. *Ring and the Book.*
        - d. Short lyrics.
    - 3. Characteristics.
        - a. Optimism.
        - b. Originality.
        - c. Force.
        - d. Analysis of character.
        - e. Power of rhythm and expression.
        - f. Obscure truths.
- I. Alfred Tennyson.
    - 1. Life.
    - 2. Work.
        - a. Minor poems.
            - 1. *Palace of Art.*
            - 2. *Locksley Hall.*
            - 3. *Two Voices.*
            - 4. *Ulysses.*
            - 5. *Crossing of the Bar,* etc.
        - b. More important.
            - 1. *The Princess.*
            - 2. *Maud.*
            - 3. *Enoch Arden.*
            - 4. *Idylls of the King.*
            - 5. *In Memoriam.*
    - 3. Characteristics.
        - a. Keen observations of nature.
        - b. Scientific knowledge in poetic form.
        - c. Triumphs over religious doubt.
        - d. Lyrical and narrative power.
        - e. Perfect verse form.
- J. Other writers.
    - 1. Charles Reade.
    - 2. Charles Kingsley.
    - 3. Bulwer-Lytton.
    - 4. Charlotte Brontë.
    - 5. James Froude.
    - 6. Herbert Spencer.
    - 7. Thomas Huxley.
    - 8. Elizabeth Barrett Browning.

Questions and Suggestions.

Why does the historical background of this period make possible the variety of literature produced?

Which writers suffered most from religious doubt in this period? Which one never regained his faith?

Would Browning's naturally hopeful character be a reason for his escaping the period of doubt?

Read Pippa's song in *Pippa Passes* for an expression of Browning's faith.

Why are Carlyle and Browning considered spiritual tonics?

What does *Crossing the Bar* tell us of Tennyson's faith? Read *Idylls of the King* and report on class of poems, allegorical significance, beauty of thought, and expression?

Lycidas, Elegy Written in a Country Churchyard, Adonais, and *In Memoriam* are the four greatest elegies in the English language; give the author, occasion, plan, and rank of each poem.

Which one of Thackeray's novels is said to contain no hero? What one of Thackeray's characteristics does it contain?

Which of Dickens's novels is said to be the story of his own life? Illustrate Dickens's characteristics by this novel. Dickens's humor is often said to be grotesque; do you consider it so? Compare a character description in one of Dickens's novels with one in Thackeray's *Vanity Fair*. What is the difference?

Which of George Eliot's characters is supposed to be herself? Which her father and brother? What fault creeps into her later novels and how can you account for it? Read *Adam Bede* and *Mill on the Floss* and report on characteristics found in each.

Read Matthew Arnold's *Dover Beach*. What does the poem tell you of the writer's state of mind?

American Literature.

AMERICANISM, that sturdy pride in all that is worth while in self and country, early found expression in our literature. Even before the Revolution a certain force and fearlessness, totally unknown on English soil, began to be apparent in the literary expression of America. Within a half century after the adoption of the Constitution, the hills, valleys, and rivers of New York, the birds and flowers of the new land, the picturesque Indian, and even the early types of American men and women were familiar to the Old World through Irving and Cooper. American subject-matter, American spirited expression, American views on politics, religion, economics, and art have grown more and more steadily to make up the production of our writers and to give us a definite literature. When we consider that three centuries ago our land was a wilderness and that, together with all the work necessary to develop that wilderness into the present land of civilization, we have also created an individual literature we have just cause for pride in our nation.

The swiftness of this achievement, and the nearness in time of the great body of literary production, make it difficult to divide American literary history into periods, characterized as those of English literature are. It is quite possible that as time gives the distance necessary to get the true proportion the relative greatness of the writers will be readjusted, and the whole body of literature will be redivided. For that reason only most evident lines of divisions have been opened in the following outline. For the same reason it has been impossible to estimate the importance of the very recent, or present-day, writers. The proportions of time given to them must depend upon the judgment of the teacher, until time, the most just critic of all, gives each his place.

The pupil's initiative should be given full scope in the study of American literature. He should be made to feel a strong patriotic pride in the work, and that it is his place to prove the place of each writer to himself and to his classmates as a matter of individual interest. This can be done by the assignment of topics for reports to the class, by insisting on a wide reading of each writer's work, and by free discussion of the literary side of that work. The questions and suggestions for study are meant to bring out definitely certain points along this line of discussion. The adverse criticism, almost contempt of our claim to an individual literature by the older nations, should put the pupils into a defensive attitude to prove the contrary, but this proof must be based on just criticism which comes from a thorough knowledge of the thing criticised.

Colonial Period (1607-1765).

- I. CHARACTERISTICS.
  - A. No American background.
  - B. Subject-matter of adventure, history, and religion.
  - C. Growth, in last years, of national fearlessness of expression.
- II. WRITERS.
  - A. Captain John Smith.
  - B. Increase and Cotton Mather.
  - C. Roger Williams.
  - D. Jonathan Edwards.
  - E. Anna Bradstreet.
  - F. Writer of *Bay Psalm Book*.
- III. NEWSPAPERS.
  - A. *Boston News Letters.*
  - B. *Boston Gazette.*
  - C. *New England Courant.*

Questions and Suggestions for Study.

The general class of subject-matter and ability of each of these writers should be known, although some of them are not American in birth or work.

An investigation of these early newspapers will prove of interest because of the men connected with them and the merit of the papers in themselves.

How can you account for the seriousness of the writers of this time?

What interest was developing in the latter part of the period that brought life into the later literature?

Did any of the writers of this period attract attention in Europe?

Contrast, briefly, the period of English literature, which covers the same time, with this early American period.

Revolutionary and Constitutional Period (1765-1790).

- I. CHARACTERISTICS.
  - A. Politics.
  - B. Freedom.
  - C. Controversy.
  - D. Shrewdness.
- II. PROSE.
  - A. Oratory and politics.
    - 1. Thomas Jefferson.
    - 2. Alexander Hamilton.
    - 3. James Madison.
    - 4. John Jay.
    - 5. Thomas Paine.
  - B. Philosophy.
    - 1. Benjamin Franklin.
      - a. Life.
      - b. Work.
        - 1. *Poor Richard's Almanac.*
        - 2. *Wise Speech of Father Abraham.*
        - 3. *Autobiography.*
      - c. Characteristics.
        - 1. General truths.
        - 2. Practical wisdom.
        - 3. Clear, concise sentences.
        - 4. Humor.
      - d. Place.
        - 1. Early type of Americanism in literature.
        - 2. First literature independent of passing events

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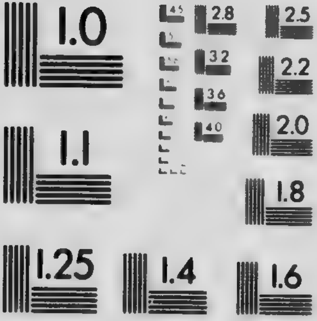


APPLIED IMAGE Inc

Century of Creative Literature.

(1790-1890).

I. EARLY NEW YORK GROUP.
  A. Washington Irving.
    1. Life.
    2. Prose.
      a. Early.
        1. *Knickerbocker History.*
        2. *Sketch Book.*
      b. Results of foreign travel.
        1. *Bracebridge Hall.*
        2. *Tales of a Traveler.*
        3. *Life and Voyages of Columbus.*
        4. *Conquest of Granada.*
        5. *Alhambra.*
      c. Results of American Travel.
        1. *Tours on the Prairies.*
        2. *Astoria.*
      d. Miscellaneous later work.
        1. *Adventure of Captain Bonneville.*
        2. *Life of Washington.*
    3. Characteristics.
      a. Spontaneity.
      b. Humor.
      c. Wholesome sentiment.
      d. American atmosphere.
      e. Simplicity of style.
    4. Place.
      a. Popular with all classes.
      b. Ranks with Addison and Steele.
      c. Inventor of American short story with local background.
  B. James Fenimore Cooper.
    1. Life.
    2. Work.
      a. Novels.
        1. *Leatherstocking Tales.*
        2. *Sea Tales.*
        3. *The Spy.*
      b. History.
        1. *History of United States Navy.*
    3. Characteristics.
      a. Out-of-door adventure.
      b. Idealization of characters.
      c. American background and character.
      d. Carelessness in style and sentence structure.
    4. Place.
      a. Founder of American romance.
      b. Source of material for history of pioneer life.
  C. William Cullen Bryant.
    1. Life.
    2. Work.
      a. Poetry.
        1. *Thanatopsis.*
        2. *Sella.*
        3. Lyrics and short poems.
        4. Translations.
      b. Prose.
        1. Newspaper letters.
        2. Addresses.
    3. Characteristics.
      a. Love of country.
      b. Love of nature.
      c. Stately, reserved verse form.
      d. Temperate criticism.
    4. Place.
      a. Leader of dignified cultured formalism.
      b. Pioneer poet of American nature.

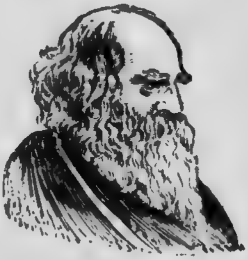
  D. Fitz-Green Halleck and Rodman Drake.

II. NEW ENGLAND GROUP.
  A. Ralph Waldo Emerson.
    1. Life.
    2. Work.
      a. Prose.
        1. Essays on morals, nature, and philosophy.
      b. Poetry.
        1. *Threnody.*
        2. Short poems.
    3. Characteristics.
      a. Noble ideals.
      b. Short, clear, strong sentences.
      c. Epigrams.
    4. Place.
      a. Inspirer of youth.
      b. Calm, sane priest of faith.

  B. Nathaniel Hawthorne.
    1. Life.
    2. Work.
      a. Stories and Legends.
        1. *Tanglewood Tales.*
        2. *Mosses from an Old Manse.*
        3. *Great Stone Face.*
      b. Novels.
        1. *Blithedale Romance.*
        2. *Marble Faun.*
        3. *Dr. Grimshaw's Secret.*
        4. *The Scarlet Letter.*

William Cullen Bryant.

Report by Ella Norris.
Notes by Rachel Patten.



W. C. Bryant.

I. Early life.
  - A. Parentage.
    - 1. Father.
      - a Name– Peter Bryant.
      - b. Occupation– Physician.
      - c. Character.
        - 1. Fond of nature
        - 2. Industrious.
        - 3. Careful and intelligent.
        - 4. Devoted much time to study.
    - 2. Mother.
      - a. Name– Sarah Snell.
      - b. Descended from the Pilgrims.
      - c. Character.
        - 1. Modest housewife.
        - 2. Well educated.
        - 3. Helped to teach him.
  - B. Education.
    - a. Studied at Williams College.
    - b. Began to write verses in 1802.
    - c. Left school in 1812 to study law.
  - C. Life work and achievements.
    - a. Practiced law at Plainfield.
    - b. Became editor of the *New York Review* in 1825.
    - c. Famous as editor and writer.
    - d. Noted as poet and orator.

Cedarmere.

Bryant's country-home at Roslyn, Long Island, was called Cedarmere.

BLACKBOARD LESSON.

- 3. Characteristics.
  - a. Imaginative insight.
  - b. Dramatic intensity.
  - c. Romantic background.
  - d. Moral problems.
  - e. Brilliant, easy style.
- 4. Place.
  - a. Foremost writer of American fiction.

C. Henry Wadsworth Longfellow.
- 1. Life.
- 2. Work.
  - a. Prose.
    - 1. *Hyperion.*
    - 2. *Outre-Mer.*
    - 3. *Kavanaugh.*
  - b. Poetry.
    - 1. Narrative poems.
      - a. *Evangeline.*
      - b. *Miles Standish.*
      - c. *Hiawatha.*
    - 2. Dramatic poems.
    - 3. Ballads and lyrics.
    - 4. Translations.
- 3. Characteristics.
  - a. Vigorous sympathy.
  - b. Healthy mind.
  - c. Faith in mankind.
  - d. Simplicity and grace of style.
- 4. Place.
  - a. Most popular American poet.
  - b. Children's poet.

D. John Greenleaf Whittier.
- 1. Life.
- 2. Work.
  - a. Short poems.
    - 1. On slavery and religion.
    - 2. Legendary ballads.
  - b. Long poems.
    - 1. *Snow-Bound.*
    - 2. *Tent on the Beach.*
- 3. Characteristics.
  - a. Democracy.
  - b. Genuine sincerity.
  - c. Vigorous freedom.
  - d. Poetic imagination.
  - e. Poems of song.
- 4. Poet of the people.

E. Oliver Wendell Holmes.
- 1. Life.
- 2. Work.
  - a. Prose.
    - 1. Essays.
      - a. *Breakfast Table Scenes.*
      - b. *Over the Teacups.*
      - c. *One Hundred Days in Europe.*
    - 2. Novels.
      - a. *Elsie Venner.*
      - b. *Guardian Angel.*
      - c. *A Mortal Antipathy.*
    - 3. Poetry.
      - a. *Chambered Nautilus.*
      - b. *Dorothy Q.*
      - c. *One Hoss Shay.*
      - d. Shorter poems.
- 3. Characteristics.
  - a. Forcible intelligence.
  - b. Wit and shrewdness.
  - c. Charity.
  - d. Easy, graceful prose.
- 4. Place.
  - a. A sage, humorous philosopher.

F Henry David Thoreau.
- 1. Life.
- 2. Prose.
  - a. Essay on philosophy and nature.
    - 1. *Walden.*
    - 2. *Excursion.*
    - 3. *Spring,* etc.
- 3. Characteristics.
  - a. Philosophy of simple living.
  - b. Humor.
  - c. Cynicism.
  - d. Direct, concise sentences.
  - e. Poetic phrasing.
- 4. Place.
  - a. With Izaak Walton.

G. James Russell Lowell.
- 1. Life.
- 2. Work.
  - a. First period; poetry.
    - 1. *The Present Crisis.*
    - 2. *The Biglow Papers.*
    - 3. *Vision of Sir Launfal.*
    - 4. *Fable for Critics.*
  - b. Second period.
    - 1. Poetry.
      - a. *Biglow Papers* (Second series).
      - b. *Commemoration Ode.*
    - 2. Prose (Essays).
      - a. *Fireside Travels.*
      - b. *Among My Books.*
      - c. *My Study Windows.*
  - c. Third period.
    - 1. Poetry.
      - a. *Hearts-ease and Rue.*
    - 2. Prose.
      - a. *Addresses and Essays.*
- 3. Characteristics.
  - a. Love of nature.
  - b. Tenderness.

- c. Humor.
- d. Insight.
- e. Broad scholarship.
- 4. Place.
  - a. Best example of critic and poet combined.
- H. Francis Parkman
  - 1. Life.
  - 2. Work.
    - a. *Oregon Trail.*
    - b. *France and England in America.*
    - c. *History of the Conspiracy of Pontiac.*
  - 3. Characteristics.
    - a. Outdoor adventure.
    - b. Accuracy.
    - c. Freshness and beauty of style.
  - 4. Place.
    - a. Among foremost historians.

- III. SOUTHERN WRITERS.
  - A. Edgar Allan Poe.
    - 1. Life.
    - 2. Work.
      - a. Prose.
        - 1. Detective stories.
          - a. *Murders of the Rue Morgue.*
          - b. *The Purloined Letter.*
        - 2. Analytical tales.
          - a. *Gold Bug.*
        - 3. Moral allegory.
          - a. *The Black Cat.*
          - b. *The Tell-Tale Heart.*
        - 4. Supernatural stories.
          - a. *Fall of House of Usher.*
      - b. Poetry.
        - 1. *The Raven.*
        - 2. *The Bells.*
        - 3. *Annabel Lee.*
        - 4. *Israfal,* etc.
    - 3. Characteristics.
      - a. Prose.
        - 1. Morbid imagination.
        - 2. Lack of characterization.
        - 3. Humor without pathos.
        - 4. No humor.
        - 5. Charm of swift, strong impression.
      - b. Poetry.
        - 1. Artificial.
        - 2. Vague subject-matter.
        - 3. Imperishable beauty of verse form and expression
    - 4. Place.
      - a. Inventor of American detective stories.
      - b. Master of beauty in verse.
      - c. Similar position in poetic field to Coleridge.
  - B. Sidney Lanier.
    - 1. Life.
    - 2. Works.
      - a. Prose.
        - 1. Boys' stories.
        - 2. Lectures on prose and poetry.
      - b. Poetry.
        - 1. *Ballad of the Trees and the Master.*
        - 2. *Marshes of Glynn.*
        - 3. Other narrative and lyric poems.

    3. Characteristics.
      1. High ideals.
      2. Refined, melodious verse.
      3. Beauty.
    4. Place.
      1. Preacher of art in life.
IV. OTHER WRITERS.
  A. Harriet Beecher Stowe.
  B. Daniel Webster.
  C. George Bancroft.
  D. William Prescott.
  E. Walt Whitman.
    1. Life.
    2. Works.
      a. Prose.
        1. *Specimen Days.*
        2. *Democratic Vistas.*
        3. *Backward Glance O'er Travel'd Roads.*
      b. Poetry.
        1. *Leaves of Grass.*
    3. Characteristics.
      a. Confusion of subject-matter.
      b. Frequent coarseness.
      c. Democracy.
      d. Out-of-door life and energy.
      e. Suggestiveness.
    4. Place.
      a. Poet, portraying the average man.

Present-Day Period.

I. EASTERN GROUP.
  A. Thomas Bailey Aldrich.
  B. Emily Dickinson.
  C. E. C. Stedman.
  D. John Burroughs.
  E. Henry James.
  F. Mary Wilkins.
  G. Francis Richard Stockton.
  H. William D. Howells.
II. WESTERN GROUP.
  A. Joaquin Miller.
  B. James Whitcomb Riley.
  C. Helen Hunt Jackson.
  D. Bret Harte.
  E. Mark Twain.
  F. Eugene Field.
  G. William Jennings Bryan.
  H. Ella Wheeler Wilcox.
III. SOUTHERN GROUP.
  A. F. Hopkinson Smith.
  B. George W. Cable.
  C. James Lane Allen.

Questions and Suggestions on the

Revolutionary and Constitutional Period.
Creative Period.
Present-Day Period.

Reports giving the chief discussion to the speeches of the men under *Oratory and Politics* should be given to the class, with enough of the events of their lives to review them for the pupils. The reports should bring out the characteristics of the period in their writings.

The writing in America had been on the events of the day, until the time of Franklin. Explain how his was not and yet is considered one of the strongest influences in forming our nation.

Select passages from the *Knickerbocker History* and the *Sketch Book* to illustrate Irving's characteristics. Compare Irving's and Addison's sketches on Westminster Abbey.

What criticism is to be found against Cooper's Indians? Why are Cooper's writings romances rather than novels? Read *The Spy* and *Last of the Mohicans* and select definite passages to illustrate Cooper's characteristics, and to prove his claims to being the founder of American romance.

Why does Bryant's *Yellow Violet* mark the beginning of an epoch in American literature? Select a short quotation in *Sella* which sums up the lesson taught. In comparing Bryant's earliest works with his last, what peculiar fact is evident? For what newspaper did Bryant write?

What one poem makes the fame of Halleck and Drake?

Compare Emerson and Franklin in their Americanism. Illustrate by reading passages from each.

Prepare a report on the Brook Farm.

What is Transcendentalism? Explain this term in connection with Emerson and his friends.

Contrast Carlyle and Emerson in life, character, and writing; compare and illustrate the last mentioned from the work of each.

Bring epigrams from Emerson to the class that will illustrate his characteristics.

What did Hawthorne do for New England which Irving had done for New York? Read *Great Stone Face* for an example of imaginative insight of Hawthorne. Read to the class chapters from *Marble Faun* illustrative of dramatic intensity and of romantic background; have these passages reproduced by the pupils with the attempt on their part to retain the same characteristics. Trace by graphic the development of one of Hawthorne's characters.

What poem brought Longfellow his first real recognition? Why are his three long narrative poems of importance in the history of American literature? Why is Longfellow called the Children's Poet? Illustrate his characteristics from *Evangeline*. Why does *Hiawatha* stand alone in its place in American literature?

Compare Whittier and Franklin. Read Whittier's poem *Democracy* and show how the principles advocated would make him take his stand against slavery. Why is *Snow-Bound* famous?

Do the indications to-day show which field of Holmes's work will be most lasting? With whom could you compare him in English literature? Which group of his work most clearly shows his humor? His intelligence in scientific matters? His high ideals?

Why is a complete understanding of Thoreau's character necessary to understand his place in literature? What would be the effect upon man in general if his philosophy of life was adopted?

Read *Walden* and illustrate Thoreau's characteristics from several passages. Compare portions of it with Walton's *The Complete Angler.*

What different sides of Lowell's nature were illustrated by *Biglow Papers* and *Vision of Sir Launfal?* What two of his characteristics indicate his ability as a literary critic?

Read one poem or story from each of Poe's fields of work and illustrate his characteristics by them. Is there any allegorical meaning to you in *The Raven?* Is Poe's fame increasing or decreasing?

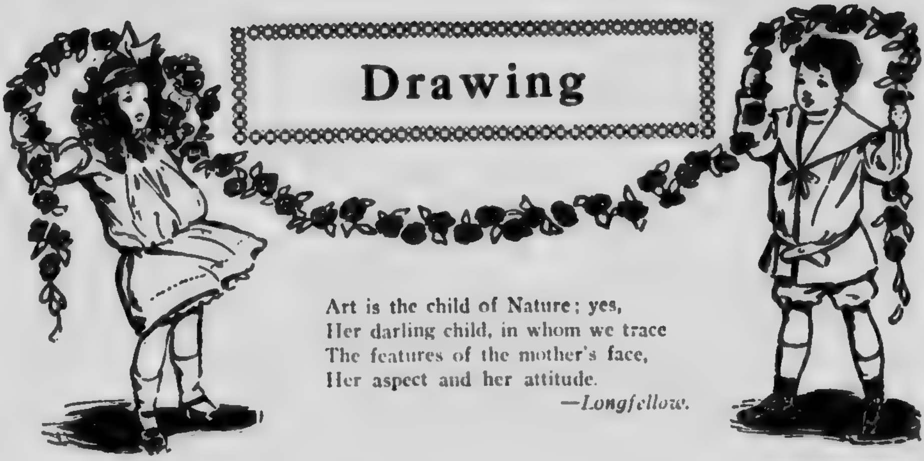
Why is Harriet Beecher Stowe's *Uncle Tom's Cabin* of sufficient importance to win her a place for all time?

What one thing brought fame to Daniel Webster?

Why is Walt Whitman's place in literature so unsettled? What qualities of his work could form a basis for his future fame? What makes the foundation for the criticism against him?

Why is it impossible to give a place to the writers of the Present-Day Period? Which ones seem to you most likely to hold a foremost place in the final adjustment and why? What group of writers shows most clearly the development of literature in the United States?

Drawing



Art is the child of Nature; yes,
Her darling child, in whom we trace
The features of the mother's face,
Her aspect and her attitude.
—*Longfellow.*

THE object of drawing in schools is not to make artists, but to train the children to become art-loving. Through all of this work they should not only gain the power to create and appreciate the beautiful, but they should develop a greater power for enjoyment. Children have a clearer appreciation of the colorings in a picture after they have expressed their own ideas in regard to it. For this reason they should early learn that drawing is one form of self-expression.

Oftentimes a thought can be expressed by means of a drawing, or painting, that cannot be made plain by means of a word picture. A little poem by Frederick O. Sylvester, called *The Picture,* admirably expresses this thought:

"There's a pool in the ancient forest,"
The painter-poet said,
"That is violet-blue and emerald
From the face of the sky overhead."

So far in the ancient forest,
To the heart of the wood went I,
But found no pool of emerald,
No violet-blue for sky.

"There's a pool in the ancient forest,"
Said the painter-poet still,
"That is violet-blue and emerald,
Near the breast of a rose-green hill."

And the heart of the ancient forest
The painter-poet drew,
And painted a pool of emerald
That thrilled me through and through.

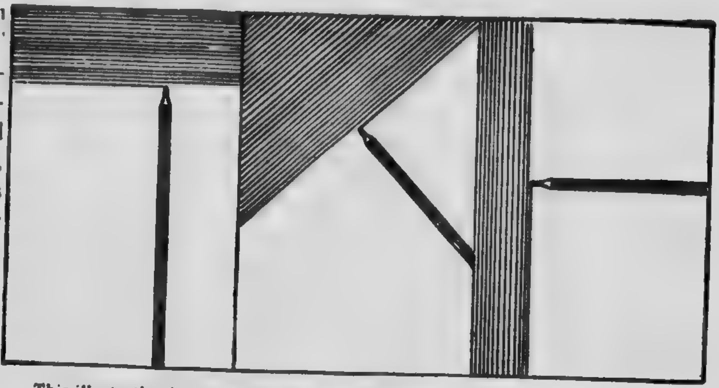
Then back to the ancient forest
I went with a strange, wild thrill,
And I found the pool of emerald
Near the breast of the rose-green hill.

The environments of the home and school are made better by a course in art study. In this way students become familiar with the harmony of color and design and early learn to apply it in decorative work.

The student learns truth through the art of drawing. He should aim to express the truth as he sees it. He gains power to draw only as he increases his power to see and to express correctly.

SUGGESTIONS. (a) Do not expect too much of little children. Lead them to express their own thoughts, not the teacher's thoughts. (b) Drawing should often be used in connection with the general work of the school. (c) As far as possible, the teacher should follow a definite outline on drawing. (d) The pencil should always be held at right angles to the line as it is drawn.

THE PLAN. A general plan of eight years' work in drawing, with suggestions and sample lessons, is given in this article, showing plainly how the instructor may plan her own work, and make use of the outlines as given.



This illustration is to show that the pencil should be at right angles to the line.

MATERIAL.

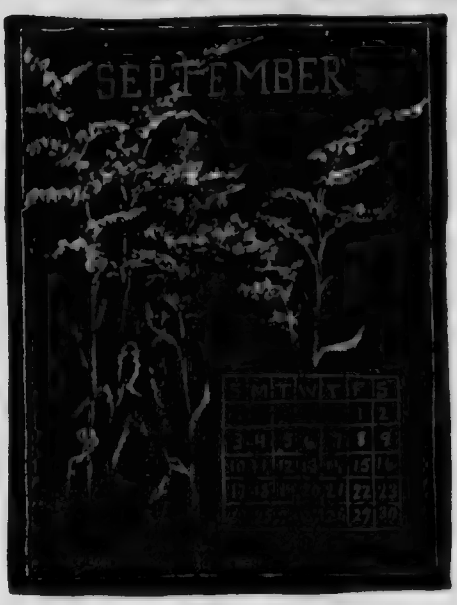
1. Manilla paper.
2. Size—6″ by 9″; 9″ by 12″; and 12″ by 18.″
3. Drawing and construction paper.
4. Mounting paper.
5. Gray and white drawing paper.
6. One-fourth inch squared paper.
7. Colored papers, crayons, and water colors (Three colors).
8. No. 7 brush, water pan, drawing pencils, scissors, and print and black glazed paper for cutting.
9. Engine colored papers, charcoal, and charcoal paper.

SUPPLIES. Supplies may be obtained from general school supply houses. It is well for the teacher to obtain catalogues and price lists from a number of houses. The names of several dealers are given below:

Garden City Educational Co., Wabash Ave., Chicago, Ill.
Prang Educational Co., Wabash Ave., Chicago, Ill.
Atkinson, Mentzer & Groves, 223 Washington St., Chicago, Ill.
Scott, Foresman & Co., Wabash Ave., Chicago, Ill.
D. C. Heath & Co., Wabash Ave., Chicago, Ill.
Milton Bradley & Co., Boston, Mass.
Devoe & Reynolds Co., 176 Randolph St., Chicago, Ill.
Thomas Charles & Co., 80 Wabash Ave., Chicago, Ill.
Joseph Dixon Crucible Co., 98 Jackson Boulevard, Chicago, Ill.

September Lessons.

The wind comes up across the hill, the wind goes laughing by:
The sweet September calls us before the flowers die.
It's time to take your baskets up and follow on with me,
Along the road and up the hill strange countries for to see.
—*Selected.*



SEPTEMBER.

Grade I.

Give lessons on the use and care of the paint box. The box should be placed in the upper right-hand corner of the desk and the paint pan at the left of the box. Pans and brushes should be cleaned at the close of every recitation. Name the colors as they are found in the spectrum: yellow, green, blue, violet, red, and orange. Give lessons in mixing colors. Yellow and blue make green; blue and red make orange. Teach the poem:

"Have you seen the sunshine fairies
Peeping out at you?
Red and orange, green and yellow,
Violet and blue?"

Paint a landscape involving a blue sky and green grass. Teach free-hand cuttings of September flowers. Paint flowers.

Grade II.

Teach lessons on the care of paints (See Grade I.). Review the mixing of colors. Take the children out of doors and teach the September poem. Paint a landscape involving blue sky, green grass, and distant trees. Repeat this part of the landscape work until the pupils can work quickly and well. Teach the names of trees and paint them. Teach the following poem:

"Do you know the trees by name
When you see them growing?
In the field or in the woods,
They are well worth knowing."

Illustrate:

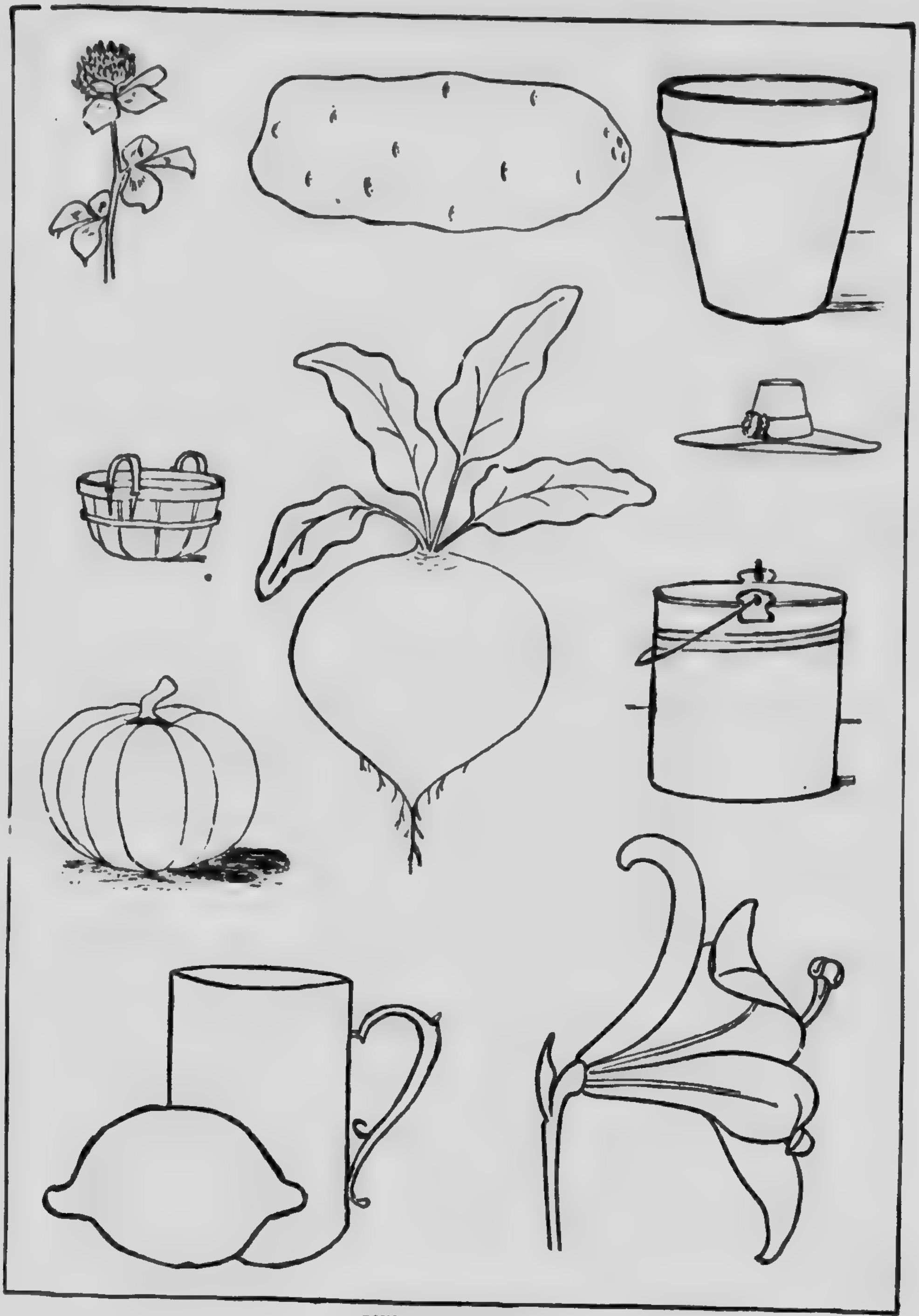
"Who has seen the wind?
Neither you nor I.
But, when the trees hang fluttering,
The wind is passing by."

Teach free-hand cutting of September flowers. Illustrate the cuttings. Paint the flowers.

Grade III

Teach this poem:

"We're three little colors,
We come hand in hand;
The three little workers
To brighten the land.
We come in the Autumn
To make the world fair,
Just look all about you,
We shine everywhere.
Three bright little sisters—
Our names you can call—
Red, Yellow, and Orange
Are the colors of fall."



OUTLINE DRAWING.

Teach colors and their complements: Yellow is the complement of violet; violet is the complement of yellow; blue is the complement of orange; orange is the complement of blue; red is the complement of green; green is the complement of red. Call attention to a September landscape, involving blue sky, green grass, distant trees, and trees in the foreground. Illustrate the following poem and use water colors as a medium:

"Little seed babies
In cribs of brown,
We found in a lane
Just outside of town."
(Milkweed).

Paint and cut September flowers.

Grade IV.

Paint a September landscape involving blue sky, grass, distant trees, trees in the foreground, and water reflecting the color of the sky. Illustrate:

"'Neath a tall and spreading tree,
Birds and squirrels drink their tea;
Each one takes a dainty sup
From a tiny acorn cup."

Paint flowers in silhouette and in color.

Grade V.

Study a September landscape. Paint grasses and fruits in neutral tint and color. Make finders (See page 261) and use them in finding a pleasing composition. Learn the use of complementary colors. Apply in painting flowers and grasses the following: Gray-green with red, red with green, blue with orange, orange with blue, yellow with violet, and violet with yellow. Illustrate:

"This road that goes right by our door
Keeps on a hundred miles or more;
Sometimes it's just a country trail,
And there's a squirrel on the rail."

Grade VI.

Paint flowers in color with pleasing background. Make neutral value scale, thus: Draw five oblongs. Leave the upper oblong white and paint the lower one black. Paint the middle one a gray half-way between white and black. Paint a value half-way between black and the central middle value and place above black. Paint a value half-way between white and the central middle value and place below white. Make color scales in the same way. Illustrate:

"High up the old gray garden wall,
The morning-glories climb;
To kiss the stately hollyhocks,
All in the summer time."

Grade VII.

Teach pencil drawings of flowers, plants, grasses, and sedges. Emphasize the drawing in this work. Study the structure of plant and the direction of lines. Carefully render the specimens in proper tones. Paint a September landscape.

Illustrate:

"The goldenrod is yellow,
The corn is turning brown,
The trees in apple orchards
With fruit are bending down."

Grade VIII.

Make pencil drawings of plants, grasses, sedges, flowers, and fruits (Read notes on pencil rendering). Sketch September landscapes in pencil and in color. Illustrate:

"Now fades the glimmering landscape on the
sight,
And all the air a solemn stillness holds."

October Lessons.

Grade I.

Paint from large showy flowers. Use paper 9"x12." Paint and cut seed pods and grasses in silhouette. Paint and cut bright leaves and berries. Paint an October landscape. Paint all leaves, flowers, grasses, etc., direct from specimen. Make a leaf booklet.

Illustrate:

"Come little leaves," said the wind one day,
"Come o'er the meadow with me and play;
Put on your dresses of red and gold,
For summer has gone and the days are cold."

Grade II.

Let the children revel in color during the month of October. Paint leaves, flowers, grasses, and trees in color and in neutral tints. Study trees. Paint in color and make a tree booklet. Cut trees.

Illustrate:

"The pine tree stood in the wood,
Tapering straight and high,
Stately and high it stood
Black green against the sky,
Crowded so close it sought the blue,
And ever upward it reached and grew."

OCTOBER.

Grade III.

Paint trees, leaves, berries, and flowers in color. Make a booklet of color notes from the above. Cut oblongs of drawing paper 1"x3" and paint splashes of color from specimens. Mount these neatly and bind into a booklet.

Illustrate:

"Oh! sun and skies and clouds of June
And flowers of June together,
Ye cannot rival for one hour
October's bright blue weather."

Grade IV.

Make finders. Use finders in landscape work. Paint an October landscape. Paint on 9"x12" paper and use finders to help select a good composition. Paint trees in color and place in landscape. Paint a flower booklet.

Illustrate:

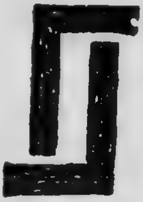
"It was late in mild October, and the long autumnal rain
Had left the summer harvest field all green with grass again;
The first sharp frosts had fallen leaving all the woodlands gay
With the hues of summer's rainbow, or the meadow-flowers of May."

Grade V.

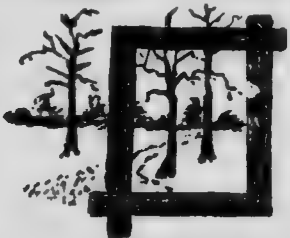
Make finders. Paint October landscape and use finders. Paint leaves, flowers, berries, and trees in color. Conduct brush studies from grasses, sedges, and flowers in silhouette or in neutral values. Mount these studies and bind them into a booklet. Make pencil sketches of trees.

Illustrate:

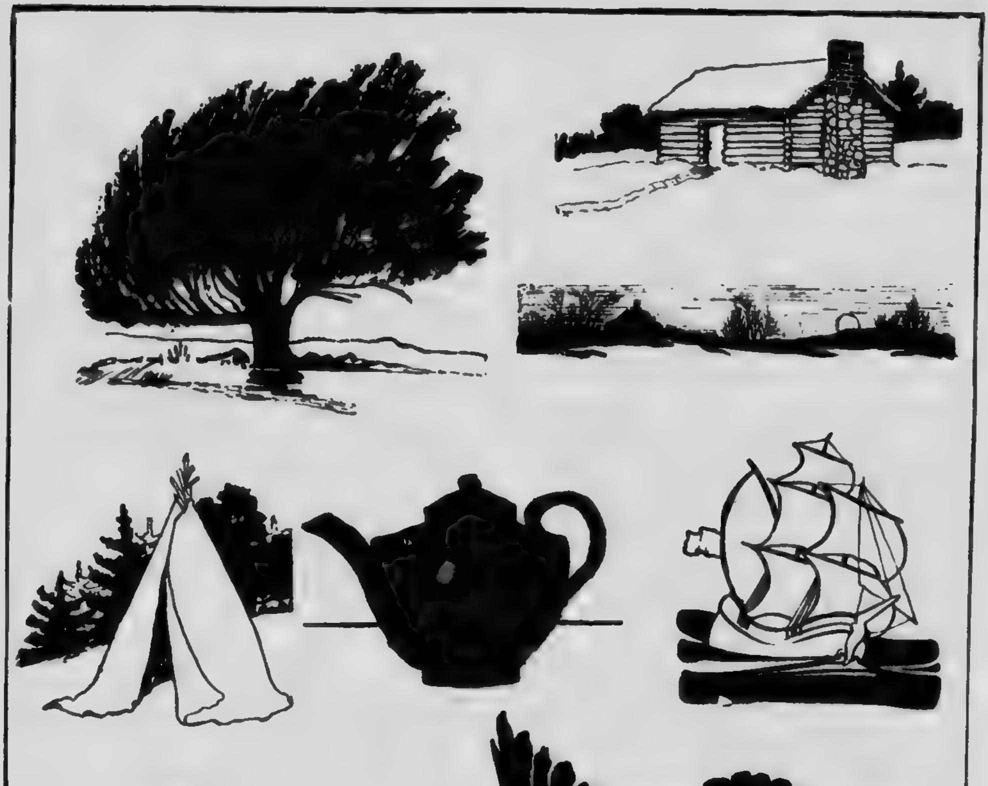
How soft and still the autumn landscape lies,
Calmly outspread beneath the smiling skies;
As if the earth in prodigal array
Of gems and broidered robes kept holiday;
Her harvest yielded and her work all done,
Basking in beauty 'neath the autumn sun!
—*Sarah Helen Whitman.*



FINDER.



USE OF THE FINDER.



BRUSH DRAWING.

Grade VII.

Prepare a decorative composition from autumn leaves, fruits, berries, and flowers. Design a book cover.

Make a booklet containing designs obtained from flowers, leaves, berries, weeds, and seed pods.

Illustrate in water colors:

> Then followed the beautiful season,
> Called by the pious Acadian peasants the Summer of All Saints,
> Filled was the air with a dreamy and magical light; and the landscape
> Lay as if new-created in all the freshness of childhood.
>
> —*Longfellow.*

Grade VIII.

Make decorative landscapes from good copies. Prepare a booklet of decorative landscapes. Design a book cover (Use a decorative design).

Illustrate in water colors:

> "The world puts on its robes of glory now,
> The very flowers are tinged with deeper dyes,
> The waves are bluer, and the angels pitch
> Their shining tents along the sunset skies."

November Lessons.

> "The earth has donned a robe of sober brown,
> A restful shadow hangs o'er plain and wood;
> The leaves, in faded heaps, have nestled down
> As if to rest from frolicking were good."

Grade I.

Have the pupils make large paper cuttings of fruit. Paint fruit in color and in silhouette. Paint bare trees in neutral tints and a November landscape in color. Bind the paintings of fruit into a booklet. Illustrate:

> "The jolly Jack-o'-lantern man,
> I'm going to make him, if I can."

NOVEMBER.

Grade II.

Conduct work in large paper cuttings of pumpkins, squashes, turnips, ears of corn, etc. Paint the *Mayflower* and place it in a scene. Paint the *Mayflower* in silhouette. Paint vegetables. Illustrate:

> "Here are apples, ripe and red,
> Picked from orchard boughs o'erhead."

Grade III.

Paint fruits in silhouette and in color. Make a fruit booklet. Paint a sunset, showing color reflected in water. Learn parts of the poem Hiawatha.

Illustrate:

> "Saw the moon rise from the water,
> Rippling, rounding from the water."

Grade IV.

Begin studying still life. Paint fruits and vegetables combined with some manufactured article. Make a Thanksgiving booklet. Paint a November landscape. Illustrate:

> "When the blossoms go to sleep,
> Autumn skies are cold and gray,
> Empty nests hang on each spray,
> Little birds have flown away."

Grade V.

Begin to study still life. Paint a November landscape. Illustrate a Thanksgiving poem and bind it into a booklet. Decorate the cover with some simple Thanksgiving design. Illustrate:

When the blossoms go to sleep,
Woods are bare and brown and still,
Hushed each little laughing rill,
Faded leaves the hollow fill.

When the blossoms go to sleep
Busy squirrels homeward hie,
Droops each drowsy butterfly,
Low winds sing their lullaby.

When the blossoms go to sleep,
Snowflakes lightly bring and fling
O'er their beds soft covering,
Safe and warm they'll dream till spring.

Grade VI.

Paint a November landscape, involving sunset effects. Begin the study of still life. Use finder and work for good composition. Bind the still life paintings into a booklet and decorate the cover. Illustrate:

"The brown birds are flying
  Like leaves through the sky,
The flow'rets are calling
  'Dear birdlings, good-bye.'"

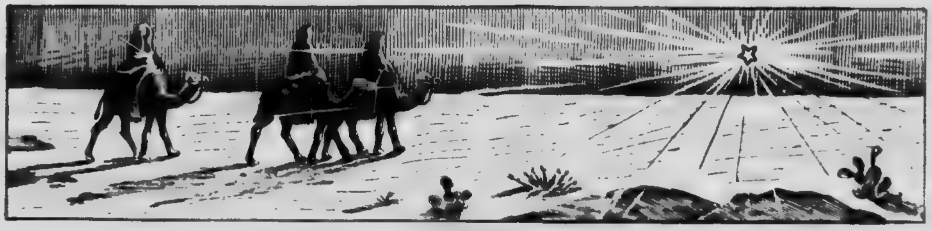
Grades VII and VIII.

Paint a November landscape involving sunset effects. Paint still life studies.

December Lessons.

"While stars of Christmas shine,
  Lighting the skies,
Let only loving looks
  Beam from your eyes.
While bells of Christmas ring,
  Joyous and clear,

Speak only loving words,
  All mirth and cheer.
Give only loving gifts,
  And in love take,
Gladden the poor and sad,
  For love's dear sake."



DECEMBER.

Grades I, II and III.

Continue the landscape work. Illustrate Christmas poems and thoughts by drawings, paintings, and cuttings. Insist on large free work. Make Christmas gifts. Emphasize the thought of giving. Paint pine trees and then place them in a landscape. Study several Madonnas.

Grade IV.

Paint a December landscape in water colors. Illustrate a Christmas poem and bind it into a booklet. Design a cover for a booklet. Design other book covers. Make Christmas gifts.

Grades V, VI, VII and VIII.

Paint a December landscape. Make stencil designs from a seed or flower motif and apply them in making Christmas articles, fancy bags, book-bags, table covers, runners, sofa pillows, curtains, etc.

January Lessons.

JANUARY.

"Wintry winds are blowing,
Trees are bare, 'tis snowing;
Beneath the drifts the flowers are buried deep,
But in their icy dwelling
Little brooks are telling
That winter is but springtime fast asleep."

Grades I, II and III.

Paint January landscapes. Use cuttings of snowflakes in designs. Place some design on a box cover or some other articles to be decorated. Draw around the design and color in some harmonious combination. Draw, cut, and paint objects received by the children as Christmas gifts. Conduct a line of action drawings.

Grade IV.

Continue still life study. Draw a January landscape in color. Illustrate a January poem and make a booklet. Make an original design for a book-bag. Make a book-bag 10 by 12 inches from burlap. Color the design with water-colors and use a buttonhole or outline stitch to outline the design.

Grade V.

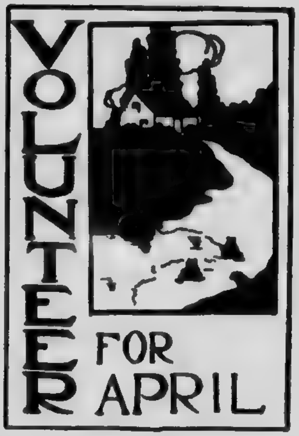
Continue still life study. Paint a snow scene. Make an original border design from a flower or a seed pod motif. Use paper 12 by 4 inches. Illustrate a January poem.

Grade VI.

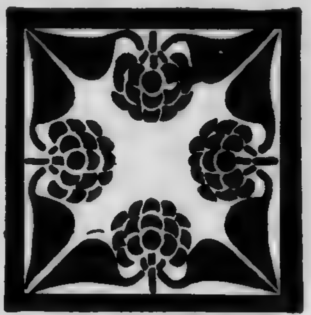
Continue still life drawing. Paint a January landscape. Make an original wall paper design from a flower or a seed pod. Use paper 8 by 8 inches. Paint a design in analogous colors. Illustrate the January poem.

Grades VII and VIII.

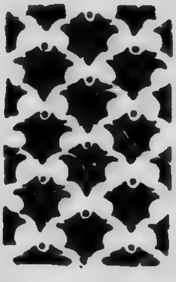
Continue drawing still life in colors. Paint a January landscape. Design and paint a poster announcing a school entertainment.



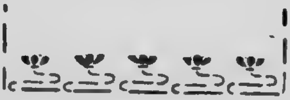
For Book Cover.



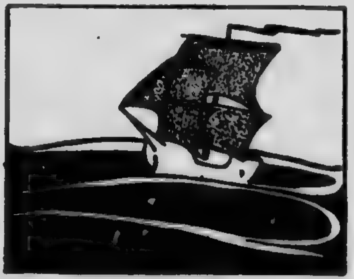
For Sofa Pillow.



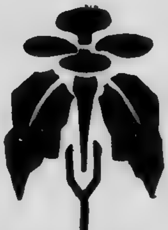
For Wall Paper.



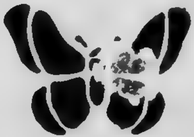
For Runner.



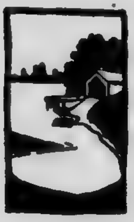
Decorative Design.



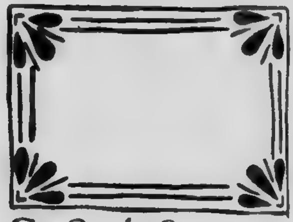
Unit for Stencil.



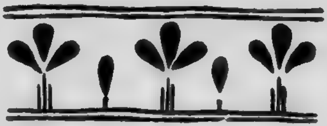
Unit for Stencil.



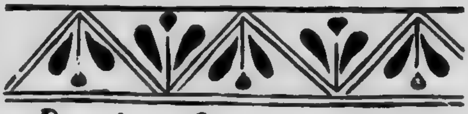
Decorative Design.



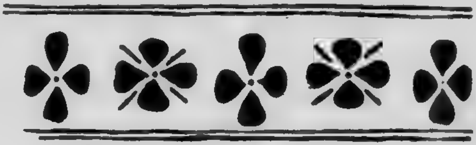
For Book Cover.



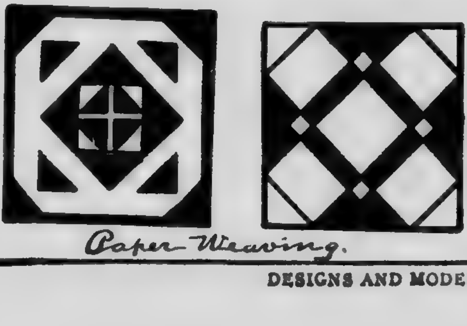
Border Design.



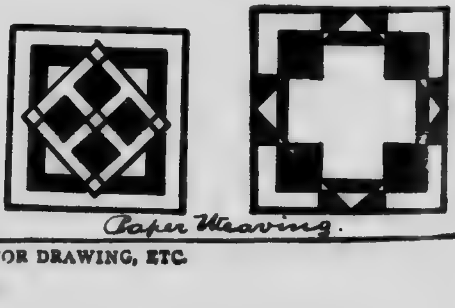
Border Design



Border Design.



Paper Weaving.



Paper Weaving.

DESIGNS AND MODELS FOR DRAWING, ETC.

February Lessons.

FEBRUARY.

"When shines the February sun,
When melting snows begin to run,
When baby brooks, though sound asleep,
Must from their winter cradle peep."

Grades I, II and III.

Make large paper cuttings to illustrate incidents in the lives of Washington, Longfellow and Lincoln. Make a booklet of cuttings. Give plenty of action drawings and blackboard work during the month. Illustrate poems. Much of the work in February should be done in silhouette.

Grade IV.

Begin action work and pose drawing. Give a great deal of silhouette work. Make a booklet of silhouettes taken from the lives of Washington or Lincoln. Design a book cover.

Grades V, VI, VII and VIII.

Begin pose drawings. Study for leading lines in the pose and work for accurate drawings. Study the lives of Washington, Lincoln, and Longfellow, and illustrate incidents in the lives of these men. Make a booklet of illustrations from the life of any one of them. Design an appropriate cover page. Paint stained glass windows.

March Lessons.

"When the March winds whistle shrill,
And go tearing down the hill,
And the melting snows run free,
Then it's clear to you and me
Spring will come as it did last year,
Spring is coming, never fear."

MARCH.

Grades I, II and III.

Silhouette drawings of animals. Make large cuttings of animals. Make paintings of animals in color. If possible bring animals into the schoolroom (a dog, cat, hen, rooster, rabbit, squirrel, etc.). Illustrate wind poems and stories.

Grade IV.

Study the work of the wind. Paint a windmill and place it in a landscape. Make a booklet illustrating the work of the wind. Design a cover page. Paint birds in colors.

Grades V and VI.

Paint birds and mount them with appropriate poems. Make a booklet of birds and design the cover page. Draw a perspective as related to rectangular objects and landscapes. Paint a marine scene.

Grades VII and VIII.

Study perspective as related to rectangular objects. Draw boxes, books, chairs, tables, etc. Paint a marine scene, illustrating some poem.

April Lessons.

My heart leaps up;
I behold a rainbow—
So was it when I was a child;
So is it now I am a man;
So shall it be when I grow old,
Or let me die.
—*Wordsworth.*

APRIL.

Grades I, II and III.

Paint spring landscapes. Paint trees and place them in a landscape. Paint spring flowers. Illustrate spring poems. Make large cuttings to illustrate the month of April. Make a booklet of painted flowers.

Grade IV.

Paint spring landscapes. Make a landscape booklet. Study and paint trees. Paint spring flowers. Illustrate spring poems.

Grades V and VI.

Paint trees. Make a tree booklet, combining painted trees and appropriate poems. Paint spring landscapes. Continue the study of perspective as related to landscapes. Illustrate the April poem.

Grade VII.

Continue the study of perspective as related to rectangular objects and landscapes. Paint spring landscapes. Illustrate the April poem and bind it into the booklet. Paint a spring poem in neutral values and in colors.

Grade VIII.

Draw a house in perspective. Draw a house in free-hand perspective and place it in a landscape with proper environments. Draw the interior of a room and decorate it in harmonious colorings.

May Lessons.

"All the birds and bees are singing,
All the lily bells are ringing,
All the brooks run full of laughter,
And the wind comes whispering after.
'What is this?' they sing and say.
'It is May!'"

MAY.

Grades I, II, III, IV, V, VI, VII and VIII.

Review any part of the year's work. Illustrate the May poem. Paint landscapes, birds, and flowers.

Water Colors.

(a) Children must have plenty of exercise in handling water colors. (b) Teach the child from the beginning to mix colors in his brush and lift all colors directly from the cake. (c) Do not let him "work over" his colors. (d) In painting flowers, he should lift the fresh colors from the cakes and place them on paper at once. For instance: If he wishes to paint the sunflower in color, he should dampen his brush, fill it with yellow and a touch of red, and apply immediately to the paper. The brown should be mixed in his brush and applied to the center of the flower. If the leaves are painted in the same manner, fresh, pleasing colors will be obtained. Paint directly from the flower. Do not draw and then paint. In painting landscapes, work for effect and not detail. All paper should be dampened. Avoid hard lines. (e) The mixing of color for the design should be done in the paint pans.

Perspective.

The *Horizon* is the apparent junction of the earth and sky. The *Line of the Horizon* is the apparent line where the earth and sky seem to meet.

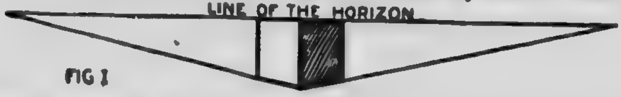


FIG I

All receding parallel lines meet at the same point, if they are sufficiently extended. If the drawing is correct, this point is on the horizon line and is called the *vanishing point* (See Fig. I).

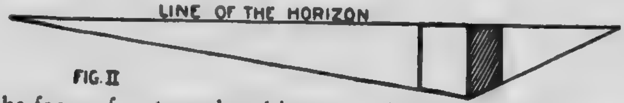


FIG. II

When the faces of rectangular objects are viewed obliquely, they appear foreshortened (See Fig. II).

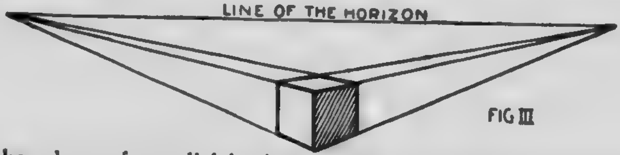


FIG III

When the edges of parallel horizontal lines recede to the left of an object, they appear to converge to a vanishing point at the left of the object. When they recede to the right of the object, they appear to converge to a vanishing point at the right of the object (See Fig. III).

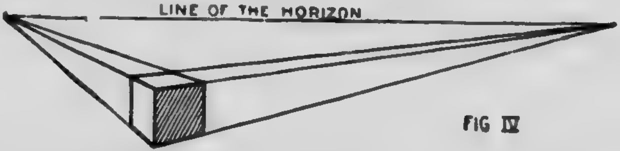


FIG IV

When the rectangular faces of an object are turned away unequally, the vanishing points are unequally distant from the nearest point of observation. The greater the angle, the nearer will be the vanishing point (See Fig. IV).

The appearance of a face view of a circle is always a circle (See Fig. V).

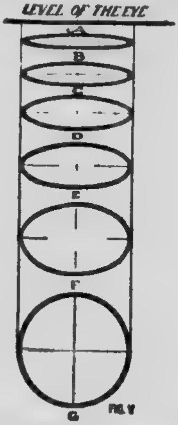


FIG. V

When a circle is seen obliquely, it always appears like an ellipse (See Fig. V)

Pencil Drawing.

Use a soft pencil. The M. S. (medium soft) is very good for ordinary work, but the pencil intended for drawing should not be used for writing exercises. While it is not wise to give too many directions in pencil rendering, it is a good plan to insist upon the pupils working directly and freely. They should never be allowed to work over and over the paper, for by so doing a shiny effect is produced. When a dark tone is desired, the child should immediately produce that tone by a strong pressure of the pencil. Show the students specimens of good work and let them copy. Lead them to do original drawings.

Poems for Illustrations.

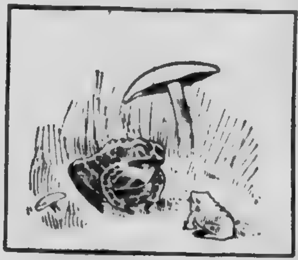


FIG. I.

"The Owl and the Pussy Cat went to sea
In a beautiful pea green boat.
'Have you seen the sunshine fairies
Peeping out at you—
Red and orange, green and yellow,
Violet and blue?'"

"Over in the meadow,
In the sand, in the sun,
Lived an old mother-toad
And her little toadie one."
(See Fig. I.)

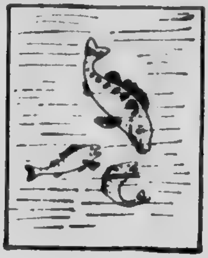


FIG. II.

"Over in the meadow,
Where the streams run blue,
Lived an old mother-fish
And her little fishes two."
(See Fig. II.)

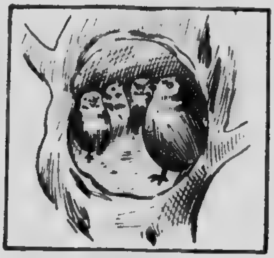


FIG. III.

"Over in the meadow,
In a hole in a tree,
Lived a mother-bluebird
And her little birdies three."
(See Fig. III.)

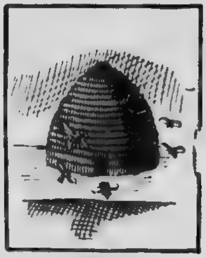


FIG. IV.

"Over in the meadow,
In a snug bee-hive,
Lived a mother-honeybee
And her little honeys five."
(See Fig. IV.)

Wynken, Blynken, and Nod one night
Sailed off in a wooden shoe.
—Eugene Field.

"I know a house so fair and fine,
No flaw in it can you detect;
A silver beauty smooths each line,
Drawn by its patient architect."
(Spider Web).

"Clouds of gray are in the sky,
Flocks of birds are passing by."

"By the shining big sea water,
Stood the wigwam of Nokomis."

"High on the branch of a walnut tree,
A bright eyed squirrel sat;
What was he thinking so earnestly
And what was he looking at?"

"Apple blossoms budding, blowing
In the soft May air;
Cups with sunshine overflowing,
Flakes of fragrance drifting, snowing,
Showering everywhere."

Bring the comb and play upon it!
Marching here we come;
Willie cocks his highland bonnet,
Jennie beats the drum.
Mary Jane commands the party,
Peter leads the rear:
Feet in time, alert and hearty,
Each a grenadier.
—Robert Louis Stevenson.
(See Fig. V.)

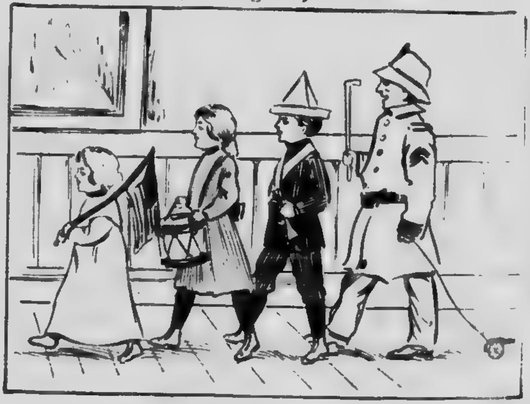
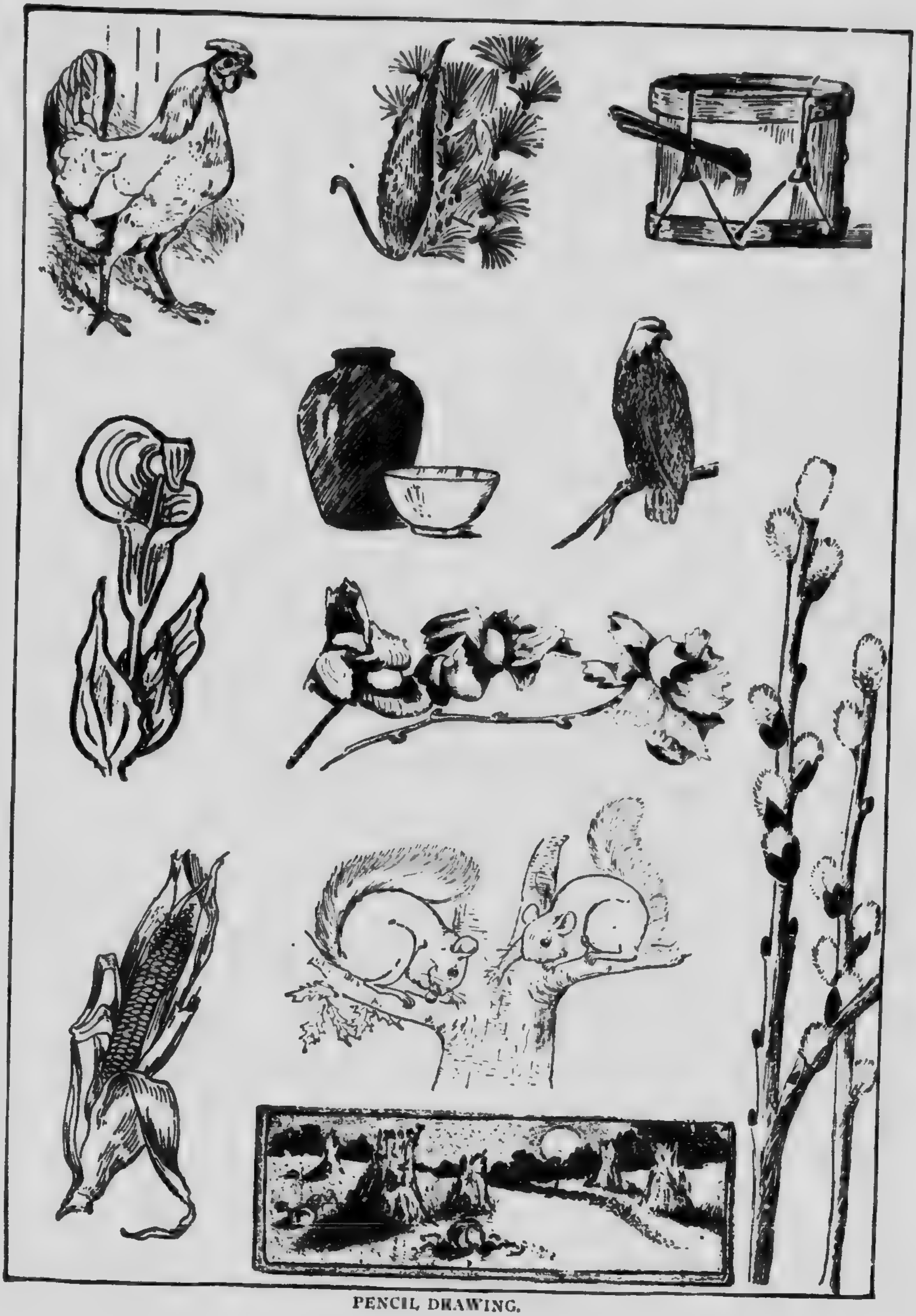


FIG. V.

How do you like to go up in a swing,
Up in the air so blue?
Oh, I do think it the pleasantest thing
Ever a child can do.
—Robert Louis Stevenson.



PENCIL DRAWING.

"Once there was a little birdie,
Sitting in a shady tree,
And this song sang little birdie,
'God is good—He cares for me.'"

"Three little bunnies
Out for a run
In the bright moonlight,
O! what fun."

"The bluebird chants, from the elm's long branches,
A hymn to welcome the budding year"

"A rainbow in the morning
Is the sailor's warning."

"A fair little girl sat under a tree
Sewing as long as her eyes could see."

"Long may it wave
O'er the land of the free
And the home of the brave.'

A little black cricket
Lives down in a thicket,
O, a jolly young cricket so gay!
—*Selected.*

The moon has a face like the clock in the hall:
She shines on thieves on the garden wall,
On streets and fields and the harbor quays,
And birdies asleep in the forks of the trees.
—*Robert Louis Stevenson.*

The friendly cow, all red and white,
I love with all my heart;
She gives me cream with all her might
To eat with apple tart.
—*Robert Louis Stevenson.*

"On goes the river
And out past the mill,
Away down the valley,
Away down the hill."

"What do you think I saw
All bundled up in fur,
Swinging at ease on a willow spray?
Nine little pussies, plump and gray;
But I could not find a sign of a claw
Nor even the tip of a velvet paw;
What do you think they were?"
(*Pussy Willows*).

"High up the old gray garden wall
The morning-glories climb,
To kiss the stately hollyhocks,
All in the summer time."

"Hang a lantern aloft in the belfry tower
Of the old North Church as a signal light."

Robins in the tree top,
Blossoms in the grass,
Green things a-growing
Everywhere we pass.
—*T. B. Aldrich.*

THE HARE AND THE TORTOISE.

Stories for Illustration.

The Sheep and Pig that Set Up House.
The Lion and the Mouse
The Foxes and Ducks
The Little Red Hen.
The Old Woman and Her Pig.
Cinderella.
The Three Pigs.
The Three Bears.
The Hare and the Tortoise.
The Story of Chicken Little.
The Donkey and the Salt.
Clytie.
The Poplar Tree.
Jack and the Bean Stalk.

Many stories used in connection with reading, literature, language, and history should be used for illustrations.

Paper Cutting.

In drawing, the little child seems to naturally express the details and to lose sight of the large, important facts. He does not see any relation of these details to the whole. Free-hand cutting will do much to overcome this tendency. There is magic in a pair of scissors and a piece of paper.

"Some speak with brush and palette,
And some with pen and ink,
But to speak with a pair of scissors
Is the nicest way, we think."

Insist on large free-hand cuttings. Never let the student draw and then cut. He should early learn to give his own free self-expression and idea of a story or object through this medium. The teacher herself should learn to cut quickly and well.

Large cuttings from black paper should be pasted on large cards to be used as models. Oftentimes the cutting should be direct from the object. The teacher can prepare cards to meet the needs of the day. The following cuttings to be prepared by the teacher will be found very helpful:

Cuttings of tame animals.
Cuttings of wild animals.
Cuttings from nature.
Mother Goose poems illustrated.
Other poems illustrated.

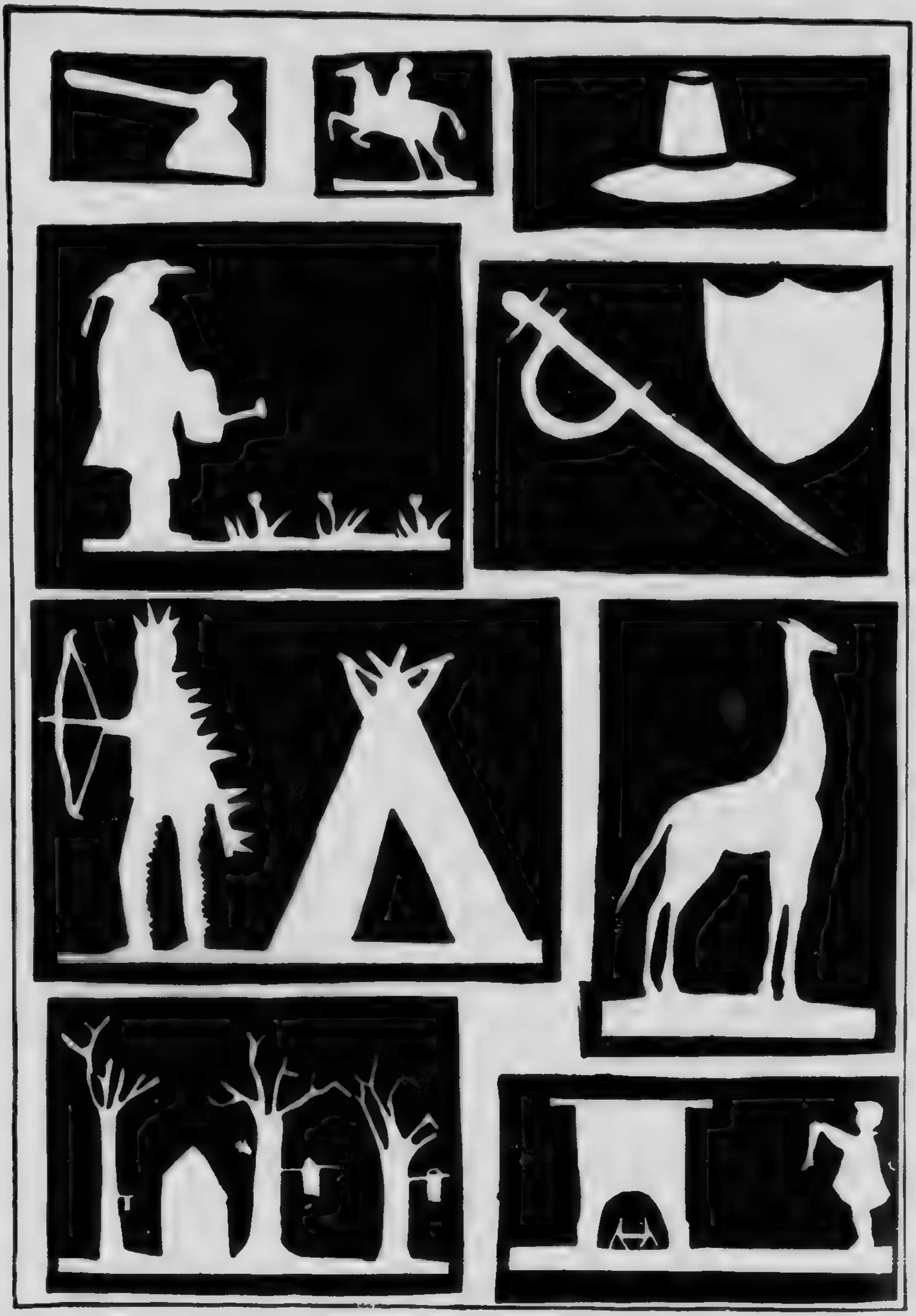
Planting a Tree.

(Commit to memory).

What does he plant who plants a tree?
He plants the friend of earth and sky;
He plants the flag of breezes free;
The shaft of beauty hovering high;
He plants a home to heaven a-nigh,
For song and mother—croon of bird
In hushed and happy twilight heard.—
The treble of heaven's harmony,—
These things he plants who plants a tree.

What does he plant who plants a tree?
He plants cool shade and tender rain,
And seed and bud of days to be,
And years that fade and flush again;
He plants the glory of the plain;
He plants the forest heritage;
The harvest of a coming age;
The joys that unborn eyes shall see,—
These things he plants who plants a tree.

What does he plant who plants a tree?
He plants in sap and leaf and wood,
In love of home and loyalty,
And forecast thought of civic good,—
His blessings on the neighborhood
Who, in the hollow of His hand,
Holds all the growth of all the land,
A nation's growth from sea to sea
Stirs in his heart who plants a tree.
—*Cooley.*



FREE-HAND PAPER CUTTING.

POSE CUTTING D DRAWING

Pose Cutting and Stories Illustrated.

After the children have gained some skill in cutting from models, read a story or poem and let them illustrate with scissors. For instance: We wish the children to tell the story (with scissors and paper) of the three bears. Before giving the story, have large cuttings of a bear, house, table, little girl, chair, bed, bowl, spoon, tree, etc., in plain view. Tell the story. Retell the story with help of the children, thus: Once there was a little girl named Goldenhair. Do you see anything that will help you in cutting the little girl's picture? The children will tell that they see a picture of a little girl. Ask them if they will tell you where the little girl was going and if they see anything that will help them in their cutting of a little girl lifting the latch of the door. Ask them to tell this much of the story with their scissors (Fig. I.). When the little girl lifted the latch of the bears' house and entered, what did she see on the table? They will tell you that she saw three bowls. Question them in regard to the relative size of the bowls, and ask them what they see that will help them to tell that part of the story. They will say that they see a picture of a table, a bowl, and a spoon. Tell them to cut the table and place the bowls containing the spoons upon the table, being very careful not

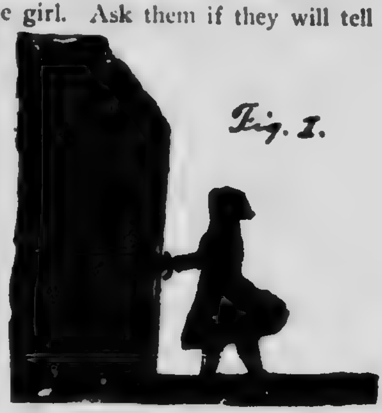


Fig. I.

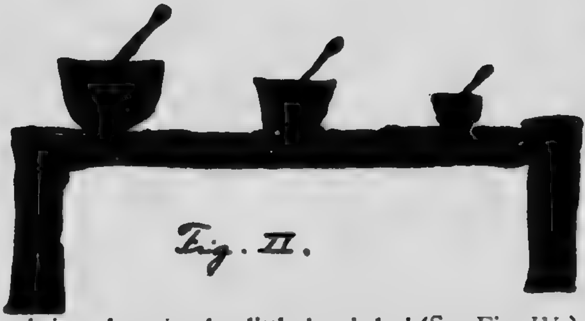


Fig. II.

to have the bowls the same size (Fig. II.).

How many chairs did Goldenhair find, and were they all the same size? Cut the three chairs, remembering that they were not the same size (See Fig. III.).

How many beds did Goldenhair find? Cut the three beds and show Goldenhair asleep in the little bear's bed (See Fig. IV.).

When Goldenhair was asleep, who came home, and what did they find? Were the bears all the same size? Cut the three bears (See Fig. V.).

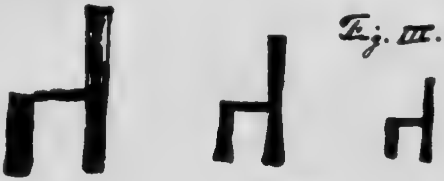


Fig. III.

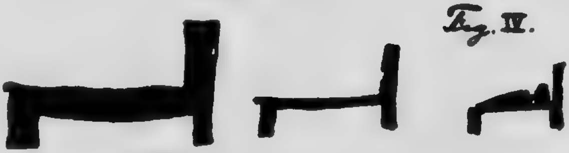


Fig. IV.

When Goldenhair awoke and saw the three bears, what did she do? Did the bears run after Goldenhair? No; they were kind bears, and stood and looked at her as she ran through the woods Cut the three bears looking at Goldenhair running through the woods (Fig. VI.).

After a lesson has been given in this way, it will furnish a foundation for a great deal of undirected seat work. Many of the brush studies given may be used for paper cutting.

All figures should be learned so well that they can be drawn easily and with a fair degree of accuracy.

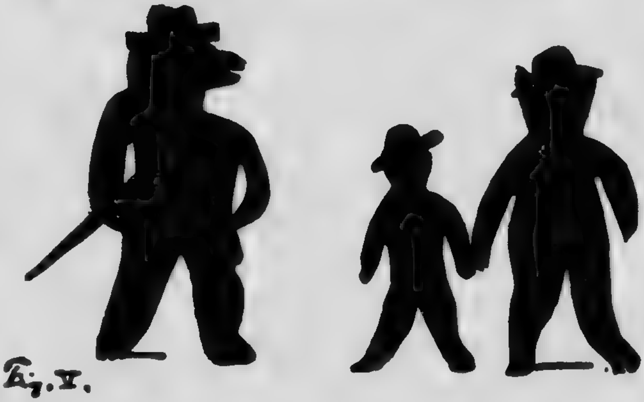


Fig. V.

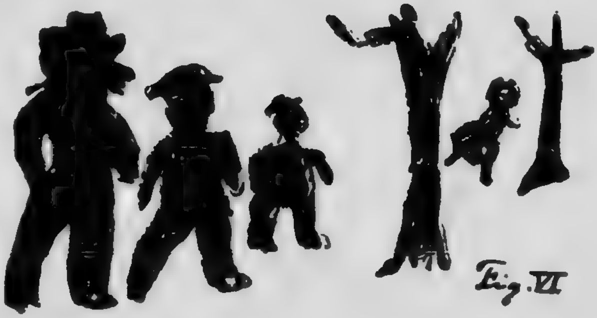
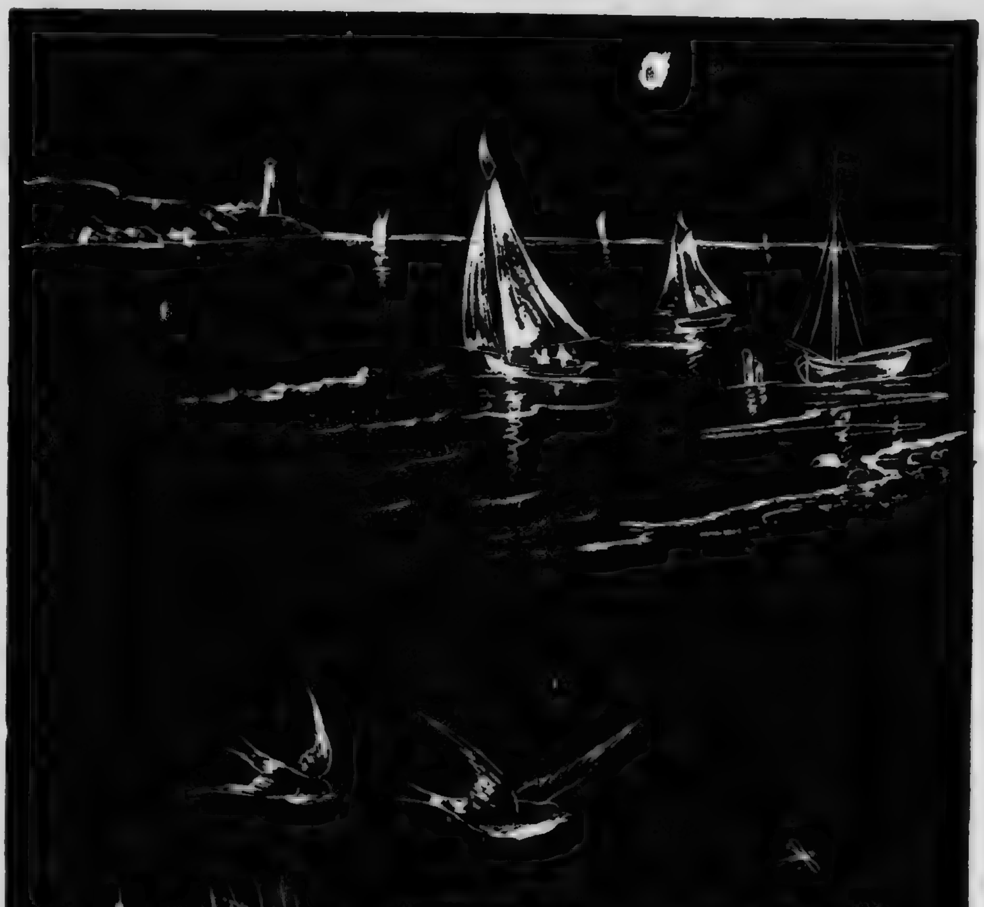


Fig. VI



BLACKBOARD LESSON.

Picture Study.

Grade I.

Madonna of the Chair........................Raphael
The Christ Child............................Murillo
Feeding Her Birds...........................Millet
Can't You Talk?.............................Holmes

Grade II.

Brittany Sheep ....Bonheur
Sistine Madonna ....Raphael
Hiawatha ....Taylor
Two Families ....Walter

Grade III.

The Gleaners ....Millet
The Horse Fair ....Bonheur
Saint Anthony and the Christ Child.........Murillo

Grade IV.

The Helping Hand ....Renouef
The Angelus .... Millet
In the Country ....LeRolle
Two Families ....Walter

Grade V.

Ploughing .... Bonheur
The Horseshoer ....Landseer
Morning .... Corot
Lincoln ....Saint Gaudens

Grades VI, VII and VIII.

There are twelve pictures quite generally accepted as masterpieces. These can be obtained in the Perry Pictures and should be placed on exhibition in every room above the 5th grade. Many should be studied. They are as follows:

Transfiguration, Raphael, Vatican, Rome.
Sistine Madonna, Raphael, Dresden Gallery.
Aurora, Guido, Pallazzo Rospigliosi, Rome.
Last Supper, Leonardo Vinci, Milan.
Last Judgment, Michael Angelo, Sistine Chapel, Rome.
Assumption, Titian, Academy Cathedral.
Night Watch, Rembrandt, Amsterdam Gallery.
Coronation of the Virgin, Fra Angelico, Louvre, Paris.
Adoration of the Lamb, Van Eyck, Church of Saint Bavon Ghent.
Immaculate Conception, Murillo, Louvre, Paris.
Madonna, Holbein, Dresden Gallery.

In addition to these twelve great pictures, the pupils should have a knowledge of the following.

Moses ....Michael Angelo
Jesus in the Temple.........Hoffman
Sir Galahad ....Watts
Windmill ....Van Ruysdael
Oxen Ploughing .... .Bonheur
Hope .... Burne-Jones
Frieze of the Prophets........Sargent
Adam and Eve ....Dürer

Exhibition of Specimens.

Three or four specimens from each drawing lesson should be carefully mounted and placed on exhibition in the room. The colored papers, called *Tinted Drawing and Construction Papers,* make very good and inexpensive mounts. Oftentimes it is wise to place an entire lesson on exhibition.

Do not scatter the display work. One place in the room should be reserved for drawing and hand work. An unused blackboard over a radiator or the top of a long, high blackboard can be used for this purpose. A large screen covered with harmonious colors is very convenient.

Physics

Blessings on Science! When the earth seemed old,
When Faith grew doting, and the Reason cold,
'Twas she discovered that the world was young,
And taught a language to its lisping tongue:
'Twas she disclosed a future to its view,
And made old knowledge pale before the new.
—*Charles Mackey.*

Physics is the branch of science which treats of the laws and properties of matter. It relates in particular to the general properties of bodies and considers their modification by the agencies of heat, light, gravitation, magnetism, and electricity.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA introduces the general subject under the title of PHYSICS and gives a very full treatment of the related topics. Students will find the treatment very helpful for home and school work. In addition to the special articles, attention is called to the following

Outline on Physics.

I. DEFINITION.
II. BRANCHES.
    1. Physical science.
    2. Natural science.
III. MATTER.
    1. General properties.
        A. Extension.
        B. Impenetrability.
        C. Divisibility.
        D. Porosity.
        E. Indestructibility.
    2. Specific properties.
        A. Ductility.
        B. Malleability.
        C. Tenacity.
        D. Elasticity.
        E. Hardness.
        F. Brittleness.
IV. DYNAMICS.
    1. Statics.
    2. Kinetics.
        A. Laws (Three primary).
            a. Inertia—Power of inertia.
            b. Momentum.
    3. Force.
        A. Systems of measuring.
            a. Metric—Dyne, unit of.
            b. English—Poundal, standard of.
            c. Horse power.
        B. Effects produced by action
            a. Point of application.
            b. Direction.
            c. Intensity.
        C. Resolution.
        D. Composition of forces.
        E. Classes.
            a. Parallel.
            b. Constant.
            c. Accelerating.
            d. Resultant.
            e. Uniform.
            f. Variable.
        F. Parallelogram of forces.
        G. Unit.
        H. Centrifugal and centripetal.
        I. Tangent.
        J. Field.

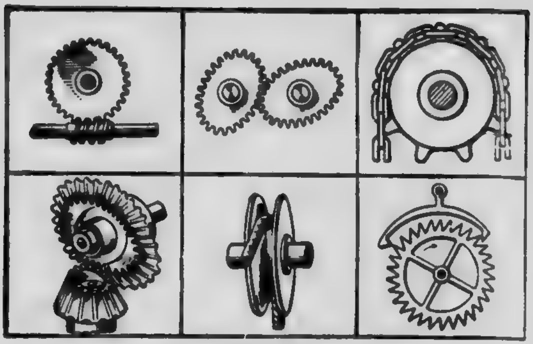
4. Attraction.
    - A. Holds together molecules of different kinds.
    - B. Takes place between two solids; solid and liquid; or solid and gas.
    - C. Acts only at insensible distances.
    - D. Differs from chemical affinity.
    - E. Capillarity.
    - F. Diffusion.
    - G. Osmosis.
    - H. Solution.
5. Cohesion.
    - A. Holds together molecules of the same kind or body.
    - B. Strong in solids.
    - C. Weak in liquids.
    - D. Absent in gases.
    - E. Altered by tempering.
    - F. Forms.
6. Gravity.
    - A. Laws.
    - B. Forces—Attractive and projectile.
    - C. Mass and weight.
    - D. Specific gravity.
    - E. Center of gravity.
    - F. Falling bodies.
    - G. Moving bodies.
    - H. Pendulum.
        - a. Movements.
        - b. Laws.
        - c. Kinds.
        - d. Uses.

V. MECHANICAL POWERS.

1. Wedge.
2. Screw.
3. Inclined plane.
4. Lever.
5. Pulley.
6. Wheel and axle.

VI. HYDROSTATICS.

1. Pressure and equilibrium of liquids.
2. Rules.
3. Pascal's law.
4. Demonstrations.
5. Machinery.
6. Equilibrium of floating bodies.
7. Buoyancy of liquids.
8. Specific gravity of liquids
9. Laws of equilibrium (4).



WHEELS.

Screw Gear. Bevel Gears. Elliptical Gears. Pulley. Sprocket Wheel. Escapement.

VII. PNEUMATICS.

1. Gas.
    - A. Molecules—Move freely.
    - B. Repulsive tendency.
    - C. Properties.
        - a. Density.
        - b. Weight.
        - c. Pressure.
        - d. Elasticity.
        - e. Condensation.
        - f. Rarefaction.
        - g. Equilibrium.
        - h. Diffusion.
    - D. Machines.
    - E. Tools.
        - a. Percussion.
        - b. Rotary.

VIII. MAGNETISM.

1. Origin of name.
2. Magnetite.
3. Magnet.
    - A. Natural and artificial.
    - B. Temporary or permanent.
    - C. Poles.
    - D. Paramagnetic or diamagnetic.
    - E. Field.
4. Compass.
    - A. Needle.
    - B. Declination.
    - C. Variation.
    - D. Inclination.
    - E. Dipping.
    - F. Uses.
    - G. Kinds.

IX. OTHER DIVISIONS.

1. Sound.
2. Light.
3. Heat.
4. Electricity.

X. Instruments.

Accumulator.
Aërostatic Press.
Air Compressor.
Air Pump.
Archimedes' Screw.
Arc Light.
Argand Lamp.
Armature.
Balance.
Barometer.
Barker's Mill.
Blowpipe.
Compass.
Camera Lucida.
Camera Obscura.
Compass.
Crookes' Tubes.
Cyameter.
Dynamo.
Electric Generator.
Electric Light.
Electric Meter.
Electric Motor.
Electrometer.
Field Glass.
Galvanic Battery.
Galvanometer.
Geissler's Tube.
Induction Coil.
Insulator.
Kinetoscope.
Leyden Jar.
Magic Lantern.
Magnet.
Microscope.
Mirror.
Opera Glass.
Prism.
Siphon.
Spectroscope.
Tuning Fork.
Voltmeter.

Questions in Physics.

Of what does the science of physics treat? Name its two general divisions.

State the three forms of matter. Name its general properties.

What is the atomic theory, and by whom was it originated? 180.

State the three principal laws of force according to Newton.

What is a spectrum? Name in order the series of colors.

Distinguish between cohesion and adhesion.

What is gravity? Specific gravity has reference to what? 1184.

What would become of loose objects on the earth's surface if gravity did not exist?

By whom were the steam engine and the steam hammer invented, and of what use are they?

With what form of matter does pneumatics deal? Tell of the uses of gas, natural and artificial.

Describe the pulley. To what power does it belong? 2332.

Tell of the origin of the name magnetism. Give names of the various kinds of magnets.

State the four laws of equilibrium in the study of hydrostatics. 1350.

For what are the following used: barometer, galvanometer, electric meter, and voltmeter?

How may air be liquefied? For what is it then useful? 1600.

What are extension and expansion, and by what are they caused?

What is a lever? Describe three classes.

How are annealing and tempering accomplished?

What discoveries did Galileo make in regard to falling bodies? What did Newton demonstrate later? 973.

Heat.

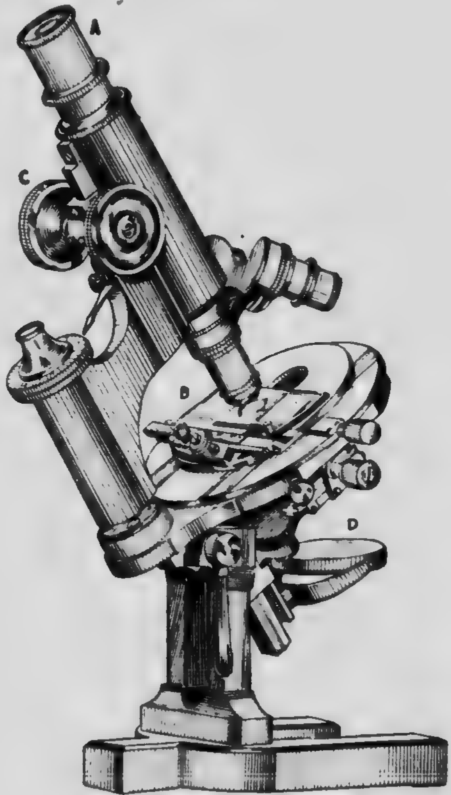
1. Generation.
2. Temperature.
3. Powers.
   - A. Vaporizing.
   - B. Expanding.
   - C. Melting.
   - D. Decomposing.
4. Manifestation.
5. Theory of undulation.
   - A. Oscillation.
   - B. Ether.
6. Sources.
7. Production.
   - A. Friction.
   - B. Percussion.
   - C. Chemical action.
8. Effects.
   - A. Exceptions.
9. Transmission.
10. Radiated heat.
11. Thermometers.
12. Calorimetry.

Questions.

What is temperature, and how is it indicated?
What powers does heat possess?
Explain the theory of undulation.
Describe the three principal thermometers.
How is motion produced in heated air?
How is chemical energy transformed into sensible heat?
What is the effect of heat upon all solid, liquid, and gaseous bodies?
What is meant by radiated heat?
Which branch of science treats of the measurement of quantities of heat?
Why is a space left between the rails in a railroad track when they are laid?
What are the sources of heat? Which one furnishes us both heat and light?

Light.

1. Sources.
2. Action—Heating and chemical.
3. Importance.
   - A. Vegetation.
   - B. Animals.
   - C. Sanitation.
   - D. Health.
4. Self-luminous bodies.
5. Theory.



MONOCULAR MICROSCOPE.
A, Eye-piece; *B*, Object glass; *C*, Screw to focus tubes; *D*, Mirror to reflect light on object to be examined.

   - A. Undulatory.
     - a. Propagation.
     - b. Transfer.
     - c. Velocity.
   - B. Effects of ether waves.
     - a. Heating.
     - b. Luminous.
     - c. Affinic.
6. Properties.
   - A. Classes.
     - a. Transparent.
     - b. Translucent.
     - c. Opaque.
   - B. Ray—Beam, pencil.
     - a. Converging and diverging.
   - C. Movement—Variation.
7. Reflection.
   - A. When.
   - B. Laws.
   - C. Conditions.
   - D. Reflectors.
8. Refraction.
   - A. On water surface.
   - B. Occurrence.
   - C. Lens—Double complex.
   - D. Rules.
   - E. Optics.
     - a. Definition.
     - b. Treatise.
     - c. Instruments.
9. History.
   - A. Knowledge of ancients.
   - B. Fables.
   - C. Solar spectrum.
   - D. Discoverers and inventors.

Ampère.
Archimedes.
Becquerel.
Bunsen.
Descartes.
Fahrenheit.
Faraday.
Fraunhofer.
Galileo.
Galvani.
Gay-Lussac.
Geissler.
Helmholtz.
Kepler.
Laplace.
Michelson.
Newton.
Röentgen.
Torricelli.
Volta.

Questions.

Illustrate the importance of light to vegetable growth.

Of what benefit is it to man? From whence does natural light come?

State four kinds of artificial light.

Explain the generally accepted theory of light.

How frequent must the luminous waves occur to produce the sensation of light and to affect the eye?

Name and define three classes of bodies in connection with light.

When is light said to be reflected? Name some good reflectors.

Explain refraction. By whom was the law of refraction discovered?

What does the science of optics embrace?

State the discoveries made by Kepler, Malus, and Descartes.

Describe an X-ray machine and its use.

Sound.

1. Definitions.
2. Production.
3. Induction.
4. Transmission.
    A. Through air.
    B. In solids.
    C. In liquids.
5. Sound waves.
    A. Rate of motion.
    B. How propelled.
    C. Travel best with the wind.
    D. May be reflected, refracted and inflected.
    E. Measurement.
    F. Velocity.
    G. Temperature.
6. Musical sounds.
    A. Impulses.
    B. Rate and pitch.
    C. Tones and unison of tones.
    D. Vibration.
    E. Chords and discords.
    F. Harmonics.
7. Echo.
8. Noise.
9. Speaking trumpet—Megaphone.
10. Ear trumpet.
12. Refraction and reflection.
13. Promoters of acoustics.
    A. Pythagoras.
    B. Aristotle.
    C. Newton.
    D. Laplace.
    E. Helmholtz.
14. Laws of acoustics.
    A. Public buildings.
        a. Gallery of Saint Paul's, London.

Questions.

Give two definitions of sound.

Explain how the impression of sound is carried to the brain.

Why are sounds not heard which are made in a vacuum?

Verify the statement that "sounds may be better heard by solids as conductors than when they are conducted by liquids or gases." 2079.

At what rate does sound travel? How long would it take a sound to travel twenty miles?

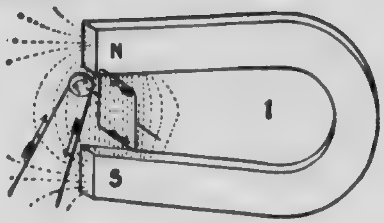
What is a speaking trumpet? Who invented the megaphone? 1750.

To whom does the science of sound particularly owe its progress?

State some principles of acoustics needful in the planning of public buildings.

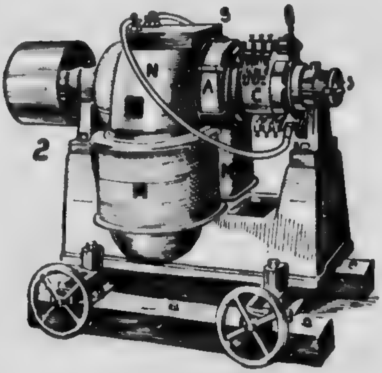
Where is the whispering gallery? Name a lake in Ireland which is noted for its echo. 864.

Electricity.



- I. Derivation of Name.
- II. Definitions.
  - A. Statical or frictional electricity.
    - a. How produced.
  - B. Dynamical electricity.
    - a. Development.
      - 1. Magnetism.
      - 2. Heat.
      - 3. Chemical action.
    - b. Currents.
  - E. Voltaic or galvanic.
    - a. Experiments.
  - F. Electrics and nonelectrics.
  - G. Conductors and nonconductors.
  - H. Insulator—Resistance.
  - I. Positive and negative electricity.
    - a. Repulsion and attraction.
    - b. Charge—Low potential and zero potential.
- III. Electroscope.
  - A. Use.
  - B. Construction.
  - C. Illustration.
- IV. Electrification.
  - A. Electric current.
    - a. Electric battery.
    - b. Voltaic battery.
    - c. Dynamo.
  - B. Electromotive force.
  - C. Electric source.
- V. Velocity.
  - A. Dependence.
- VI. Electrical Quantities.
  - A. Ohm's Law.
  - B. Units—Volt, ohm, and ampère.
- VII. Uses.
  - Revolution in economic enterprises.
  - A. Heating agency—Homes, offices, railway cars, etc.
  - B. Welding; electrotyping.
  - C. Lighting; medical uses of.
  - D. Propelling power.
  - E. Electric spark—Firing explosives.
  - F. Telephone and telegraph.
  - G. X-ray, telautograph.
  - H. Phototelegraphy.
- VIII. History.
  - A. Writings of Thales.
  - B. William Gilbert's *On the Magnet.*
  - C. First electrical machine.
  - D. Invention of Leyden jar.
  - E. Experiments and discovery of Franklin.
  - F. Animal electricity.
  - G. Volta's discovery.
  - H. Inventors.

Morse.
Edison.
Ohm.
Bell.
Tesla.
Galvani.
Faraday.
Röentgen.
Marconi.
Siemens.
Ampère.
Guericke.



THE DYNAMO.

Questions on Electricity.

From what was the name electricity derived?

Define frictional electricity, electrics, insulator, and electrolysis.

Give a list of nonconductors. Distinguish between positive and negative electricity. 893.

When is a body said to be charged?

What is a volt? How many volts can a person generally bear?

Of what is the ampère the unit? What is Ohm's Law?

State the various uses of electricity in your community.

What is the Leyden jar? By whom was it invented? 1580.

Of what particular value to science was Franklin's discovery regarding electricity?

Give a list of noted discoverers in the science of electricity.

What is electrocution and where is it employed?

Describe an electric motor. By what is electricity measured?

Write an article on *Electric Railways.* 895.

Speak of electricity as an agent in medical science.

Magnetism.

That power which, like a potent spirit, guides
The sea-wide wanderers over distant tides,
Inspiring confidence where'er they roam,
By indicating still the pathway home;—
Through Nature, quickened by the solar beam,
Invests each atom with a force supreme,
Directs the cavern'd crystal in its birth,
And frames the mightiest mountains of the earth,
Each leaf and flower by its strong law restrains
And binds the monarch Man within its mystic chains.

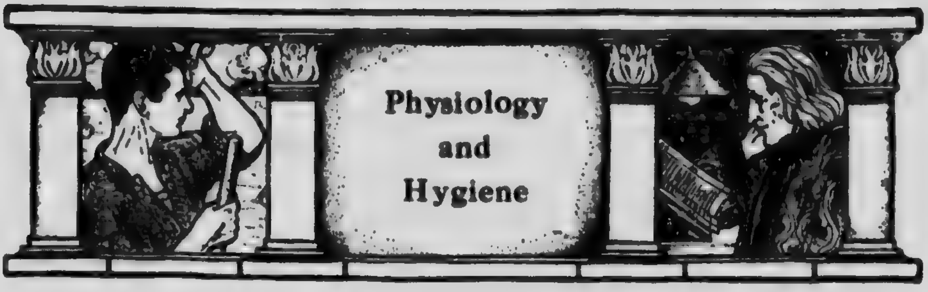
—Hunt.

The Love of Country.

Breathes there the man with soul so dead,
Who never to himself hath said,
  This is my own, my native land?
Whose heart hath ne'er within him burned,
As home his footsteps he hath turned
  From wandering on a foreign strand?

If such there breathe, go, mark him well!
For him no minstrel raptures swell;
High though his titles, proud his name,
Boundless his wealth as wish can claim,—
Despite those titles, power, and pelf,
The wretch, concentered all in self,
Living, shall forfeit fair renown,
And, doubly dying, shall go down
To the vile dust, from whence he sprung,
Unwept, unhonored, and unsung.

—Sir Walter Scott.



Physiology and Hygiene

Nor love, nor honor, wealth, nor power,
Can give the heart a cheerful hour
When health is lost. Be timely wise;
With health all taste of pleasure flies.
—*Gay.*

PHYSIOLOGY treats of the phenomena of living organisms and the processes which characterize life. This subject is explained in the topic entitled PHYSIOLOGY, but innumerable other titles are treated in a helpful manner.

The importance of this branch is well known to the student of experience. It is clear to him that an understanding of this subject is essential in caring for the body in a way that will help to develop and preserve physical powers. At an early stage in civilization, when comparatively little was understood of the laws of growth, life was dependent largely upon chance, but at present the length and pleasure of living may be wisely guided by the trained intellect.

The infant should be cared for by parents who know and practice the right modes of living. The youth needs an early training to understand the laws which govern physical phenomena. Not only that, but he should be trained to obey the laws of nature and to apply wisely the instruction given. This will not only extend the period of life, especially if right living is practiced through succeeding generations, but it will increase the joys and successes that may be attained.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA is recommended as a practical guide in this branch of science. As an introduction to the course given in the outlines, students are referred to the following

Correlated Subjects.

Abdomen.
Anatomy.
Animal.
Assimilation.
Bile.
Biology.
Bone.
Brain.
Cells.
Chest.
Chyle.
Circulation.
Connective Tissue.
Death.
Digestion.
Ear.
Embryology.
Evolution.
Eye.
Food.
Foot.
Function.
Gland.
Hair.
Hand.
Heart.
Heredity.
Horn.
Hybrid.
Hygiene.
Intestines.
Kidney.
Ligament.
Liver.
Longevity.
Lungs.
Lymphatic System.
Mastication.
Muscle.
Nails.
Natural Selection.
Nerves.
Nose.
Nutrition.
Proteids.
Protoplasm.
Respiration.
Saliva.
Skeleton.
Skin.
Spontaneous Generation.
Stomach.
Taste.
Teeth.
Tongue.
Voice.

Outline in Physiology.

- I. PHYSIOLOGY.
  - 1. Divisions.
    - A. Human.
    - B. Animal.
    - C. Vegetable.
  - 2. Allied studies.
    - A. Histology.
    - B. Anatomy.
    - C. Hygiene.
    - D. Chemistry.
- II. HUMAN BODY.
  - 1. Life and growth.
    - A. Human physiology.
      - a. Embryo.
      - b. Cells.
        - 1. Protoplasm—Globules, molecules, granules, nucleolus.
      - c. Tissue.
        - 1. Kinds.
          - Adipose.
          - Areolar.
          - Cartilaginous.
          - Osseous.
          - Retiform.
          - White fibrous.
          - Yellow elastic.
      - d. Growth.
      - e. Germ or vital force.
  - 2. Organs and functions.
    - A. Skeleton—Head, trunk, and limbs.
      - a. Bones.
        - 1. Purposes.
        - 2. Number.
        - 3. Names.
        - 4. Shape.
        - 5. Size.
        - 6. Composition.
        - 7. Ossification.
        - 8. Periosteum.
        - 9. Motion.
      - b. Muscles.
        - 1. Number.
        - 2. Form.
        - 3. Size.
        - 4. Arrangement.
        - 5. Contraction and expansion.
        - 6. Voluntary and involuntary.
        - 7. Uses.
        - 8. Movements.
        - 9. Covering—Skin.
          - a. Dermis.
          - b. Epidermis.
      - c. Living matter.
        - 1. Constituents.
          - Water.
          - Salts.
          - Fat.
          - Proteid.
          - Carbohydrate.
          - Oxygen.
      - d. Respiration.
        - 1. Organs.
          - Larynx.
          - Glottis.
          - Vocal cords.
          - Trachea.
          - Bronchi.
          - Lungs.
        - 2. Inspiration
        - 3. Expiration.
        - 4. Purpose.
        - 5. Aided by skin and kidneys.
      - e. Nervous system.
        - 1. Brain.
          - a. Center of system.
          - b. Parts.
            - Cerebrum.
            - Cerebellum.
            - Medulla oblongata.
          - c. Composition—Fibers, tissues, and matter.
          - d. Convolutions.
          - e. Weight.

- 2. Spinal cord.
  - a. Location.
  - b. Protection.
  - c. Structure.
  - d. Branches.
- 3. Nerves.
  - a. Structure—Cells, fibers, and nerve end organs.
  - b. Classes.
    - Sensory.
    - Motory.
  - c. Kinds.
    - 1. Spinal—31 pairs.
      - Posterior and anterior.
    - 2. Cranial—12 pairs.
      - Olfactory.
      - Optic.
      - Motores oculi (3).
      - Trifacial.
      - Facial.
      - Auditory.
      - Glossopharyngeal.
      - Pneumogastric.
      - Accessory.
      - Hypoglossal.
    - 3. Sympathetic.
  - d. Reflex action.
  - e. Development.
  - f. Senses—Smell, touch, taste, sight, hearing.

III. SPECIAL TOPICS.

- 1. CIRCULATORY SYSTEM.
  - A. Organs.
    - a. HEART.
      - 1. Size and shape.
      - 2. Muscular.
      - 3. Pericardium.
      - 4. Chambers.
        - a. Auricles.
        - b. Ventricles.
      - 5. Valves.
        - a. Bicuspid or mitral.
        - b. Tricuspid.
        - c. Semilunar.
      - 6. Movements.
        - a. Systole or contraction.
        - b. Diastole or expansion.
    - b. ARTERIES.
      - 1. Origin of name.
      - 2. Lead from left ventricle.
      - 3. Carry pure blood.
      - 4. Walls.
      - 5. Coats.
      - 6. Names—Aorta, pulmonary, etc.
    - c. VEINS.
      - 1. Convey blood to the heart.
      - 2. Carry venous or bad blood.
      - 3. Walls—Compare with arteries.
      - 4. Near the surface.
      - 5. Names—Vena cava ascending, vena cava descending, pulmonary, portal, jugular, etc.
    - d. CAPILLARIES.

- B. BLOOD.
  - a. Composition.
    - 1. Plasma.
    - 2. Corpuscles.
  - b. Coagulation.
  - c. Transfusion.
- C. Circulation.
  - a. Systematic.
    - 1. Collected in left ventricle.
    - 2. Propelled through aorta and its arterial branches and capillaries to all parts of body.
    - 3. Returns through veins to right auricle.
  - b. Pulmonic.
    - 1. Passes from right ventricle into pulmonary artery and its branches to lungs for purification.
    - 2. Collects and returns through pulmonary veins to left auricle; thence into left ventricle and again enters systematic system.

2. DIGESTION.

- A. Process of what.
- B. Begins in the mouth.
  - a. Food chewed and ground by the teeth.
  - b. Solids broken into bits, moistened with saliva, mixed well, formed into bolus, and swallowed.
  - c. Passes through aesophagus into stomach.
  - d. Churning process mixes ingredients.
  - e. Subjected to action of pepsin from gastric juice.
  - f. Starches and fats loosened; protoplasm dissolved; proteids converted into peptones.
  - g. Time required is from 3 to 4 hours.
  - h. This chyme then enters intestines through pylorus.
  - i. Acted upon by bile, pancreatic juice, intestinal secretions.
  - j. Starches converted into sugar; proteids into peptones; fats into emulsion.
  - k. This chyle is then absorbed by portal blood vessels and lacteals.
  - l. Acid formation and further absorption extends to larger intestines.

3. EAR.

- A. Parts.
  - a. External or concha.
    - 1. Auditory canal—Size.
    - 2. Auricle or pinna—Collects sound waves.
    - 3. Muscles.
    - 4. Wax.
  - b. Middle or tympanum.
    - 1. Size.
    - 2. Lining.
    - 3. Cavity—Mastoid process.
    - 4. Eustachian tube.
    - 5. Bones—Ossicles.
      - a. Malleus or hammer.
      - b. Incus or anvil.
      - c. Stapes or stirrup.
  - c. Internal or labyrinth.
    - 1. Vestibule.
    - 2. Cochlea.
    - 3. Semicircular canals.
    - 4. Liquid.
    - 5. Cells—Nerve ends.
    - 6. Ear sands.

B. How we hear.
  a. Production of sound waves in liquid.
  b. Speed.
  c. Vibrations—Number.
  d. Incentives to nerve action.
  e. Hindrances.
  f. Impressions and illusions.

4. EYE.
  A. Description.
    a. Globe or eyeball.
    b. Orbit.
    c. Size and shape.
    d. Coats.
      1. Sclerotic.
      2. Cornea.
      3. Choroid.
      4. Retina.
      5. Iris.
    e. Liquids.
      1. Aqueous humor.
      2. Vitreous humor.
    f. Pupil.
    g. Lens.
    h. Ciliary process.
    i. Color.
    j. Muscles.
    k. Protection.
      1. Eyebrows.
      2. Eyelids.
      3. Eyelashes.
    l. Lachrymal glands, canals, lakes, ducts.
    m. Tears.
  B. Phenomenon of sight.
    a. Dependent upon ether.
    b. Waves of light.
    c. Nerve of sight—Optic.
    d. Blind spot.
    e. Focus.
    f. Accommodation.
    g. Illusions.
    h. Color-blindness.
    i. Farsightedness.
    j. Nearsightedness.
    k. Care of the eyes.

5. DISEASE.
  A. Classes.
    a. Organic.
    b. Functional.
  B. Causes.
    a. Diathetic.
    b. Enthetic.

Diseases Common to Man.

Ague.
Anaemia.
Apoplexy.
Appendicitis.
Asphyxia.
Bright's Disease.
Bronchitis.
Cancer.
Catarrh.
Cholera.
Consumption.
Croup.
Diphtheria.
Epilepsy.
Erysipelas.
Fever.
Glanders.
Gout.
Headache.
Hydrophobia.
Hysteria.
Influenza.
Insanity.
Itch.
Jaundice.
Leprosy.
Lumbago.
Malaria.
Measles.
Mumps.
Neuralgia.
Neurosis.
Paralysis.
Pleurisy.
Pneumonia.
Poison.
Quinsy.
Rheumatism.
Scrofula.
Smallpox.
Sprain.
Saint Vitus' Dance.
Sunstroke.
Tuberculosis.
Tumor.
Typhoid Fever.
Typhus Fever.
Whooping Cough.

Questions on Physiology.

Define physiology and name its chief divisions. 2206.

Of what do anatomy and hygiene treat?

What are tissues? Name the principal kinds.

Of what is the skeleton composed? Give the number and names of the bones.

Of what uses are muscles? Explain contraction and expansion. 1876.

Distinguish between voluntary and involuntary muscles.

What are the organs of respiration? Write 12 lines on this subject.

Name the divisions of the alimentary canal. Describe the process of digestion.

Name the fluids which aid digestion and tell by what each is secreted.

Illustrate the heart and its divisions by a drawing. 1275.

Name the two systems of circulation and describe them.

Tell about the color, density, taste, composition, and use of the blood.

Define membrane, albumen, pulse, lacteals, dura mater, and coagulation.

Tell of the growth and use of the hair and nails.

Of what is the nervous system composed? Describe the brain.

Name the three divisions of the ear. Explain how we hear. 853.

What is meant by the phenomenon of sight? How may poor sight be aided?

How many teeth should an adult have? Give names of the different teeth.

The Body.

From the top of my head to my tiny toes,
I am built of bones, as every one knows.
These are the framework so strong within;
Outside they are covered with flesh and skin.

The parts of my body are only three,
My head, my trunk and my limbs, as you see.
My head has a back, two sides and a crown,
All covered with hair, yellow, black, red or brown.

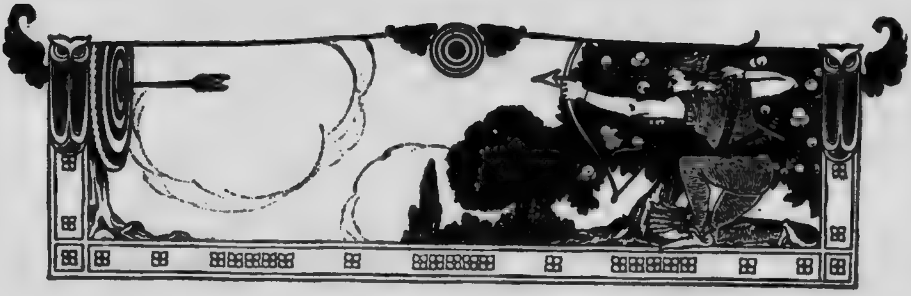
And just in front, in the foremost place,
You plainly can see my neat little face.
My face has a forehead, nose, mouth and chin;
Two cheeks where the dimples slip out and in.

Two eyes you see when you are near,
Two ears like sea-shells to help me to hear.
My neck and shoulders so broad and strong,
Arm, forearm, wrist, hand and fingers long.

My trunk and my thighs, legs, and ankles and knees,
On two feet I stand, or run, if I please,
My joints are to bend when I run, jump or walk;
I've a little red tongue to help me to talk.

These make up my body, and now I will tell
What we all must do to keep strong and well.

To be neat and clean we must take great care,
Have plenty of sunshine and breathe the fresh air,
Eat nourishing food to make good blood, and then
We all shall become strong women and men.



Games and Sports

GAMES and sports are considered essential in the development of physical skill, bodily strength, and mental activity. They aid in securing the healthful development of the body, making it fit as a dwelling for a vigorous mind. Froebel said, "Play is not trivial; it is highly serious and with deep meaning."

The aims in promoting healthful, yet playful, exercise are numerous. They tend to overcome bodily defects, such as narrowness of the chest and stooping of the shoulders, and furnish the recreation and relaxation which should follow sustained study. Above all, games and sports are both hygienic and educative in that they invigorate the circulation, enlarge respiration, and induce harmony of action between the body and the mind.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA is helpful in the study of amusements and plays for all classes. The student is referred to the special articles on the following list of

Plays and Pastimes.

Angling.
Archery.
Athletics.
Backgammon.
Bagatelle.
Baseball.
Basketball.
Billiards.
Boxing.
Bullfight.
Canoe.
Cards.
Checkers.
Chess.
Cribbage.
Cricket.
Croquet.
Curling.
Delsarte.
Dice.
Dominoes.
Falconry.
Fencing.
Gymnasium.
Lacrosse.
Lawn Tennis.
Marble.
Ping Pong.
Polo.
Pool.
Quoits.
Race.
Riding.
Roulette.
Rowing.
Skates.
Swimming.
Tennis.
Toboggan.
Trapping.
Trolling.
Whist.
Wrestling.
Yachting.

Outlines of Games and Sports.

I. DIVISIONS.
  1. Recreative.
  2. Amateur.
  3. Professional.
    A. Classes.
      a. Grecian.
      b. Gladiatorial.
      c. Modern.
        1. Competitive. 2. Contestant.

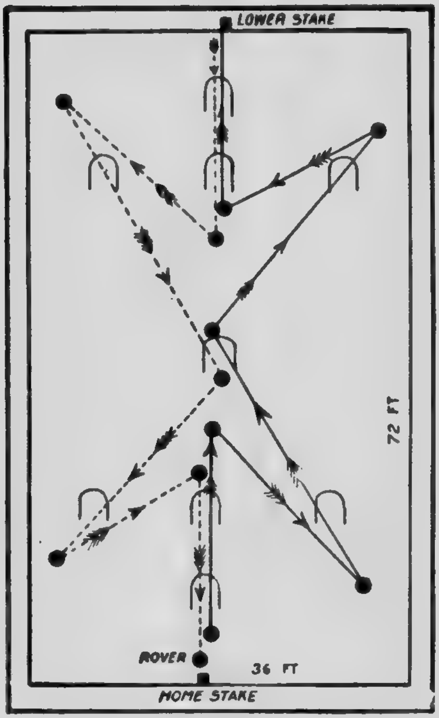
II. KINDS.
  1. Indoor.
    Bowling.
    Billiards.
    Cards.
    Chess.
    Checkers.
    Dominoes.
    Legerdemain.
    Dice.
  2. Outdoor.
    Ball.
    Cricket.
    Archery.
    Polo.
    Croquet.
    Golf.
    Tennis.
    Lacrosse.

3. Sports.
  Hunting. Boxing.
  Shooting. Wrestling.
  Racing. Cycling.
  Boating. Fishing.
4. Field.
  Hurdling.
  Pole vaulting.
  Broad jumping.
  High jumping.
  Hammer, or weight throwing.
5. Track.
  Sprinting.

III. TRAINING.
  1. Athletic.
  2. Calisthenic.
  3. Physical culture.
  4. Dancing.
  5. Gymnastic.
  6. Boxing.
  7. Wrestling, etc.

IV. ASSOCIATION.
  1. Canadian Amateur Athletic Union.
    A. Games.
    B. Time and place.
    C. Records.
    D. Championship.
  2. Intercollegiate Athletic Association of United States.
    A. Games.
    B. When and where.
    C. Records.
  3. New England Intercollegiate Association.
  4. Western Intercollegiate Games.
  5. National Amateur Athletic Union.

V. VALUE.
  1. Develops physical perfection and skill.
  2. Promotes speed, agility, endurance, etc.
  3. Quickens thought.
  4. Serves as entertainment, amusement, and recreation.
  5. Cultivates temperance, self-denial, etc.



CROQUET GROUNDS.

I. BASKETBALL.
  1. Indoor game.
  2. Played in large oblong room.
  3. Goal—18-in. net basket at each end of room suspended 10 ft. above floor.
  4. Ball—Leather cased inflated rubber bladder, 32 in. around
  5. Teams—2, of 5 players each.
    A. Guards—Right and left.
    B. Center.
    C. Forwards—Right and left.
    D. Referee.
    E. Order of game.
  6. Invented by James Naismith, in 1891.
  7. Popularity.
    A. Militia companies.
    B. Young Women's Christian Association.
    C. Young Men's Christian Association.
    D. Schools and colleges.
  8. Season—Winter.

II. FOOTBALL.

1. Popularity.
    - A. Ancient Greece and Rome.
    - B. England—12th century.
    - C. America.
    - D. Australia, etc.
2. Participants.
    - A. Higher grade pupils.
    - B. Students of colleges and universities.
3. Description.
    - A. Field.
    - B. Teams.
    - C. Players.
    - D. Officials.
    - E. Position.
    - F. Goal.
    - G. Rules.
        - a. Association.
        - b. Rugby.
    - H. Restrictions.
    - I. Movements.
    - J. Scoring.
4. Associations.
    - A. Rugby.
    - B. Australian.
    - C. American Intercollegiate.
    - D. Big Four.
        - a. Harvard.
        - b. Princeton.
        - c. Yale.
        - d. University of Pennsylvania.
    - E. Others.
        - a. Western.
        - b. Canadian.
        - c. Indian, etc.

III. BASEBALL.

1. National game.
2. Originally town ball.
3. Institution of professional organization in 1871.
4. Clubs.
    - A. National Association of Baseball Players.
    - B. National League of Professional Clubs.
    - C. American League.
5. Development of professional skill.
6. Adoption of standard rules.
7. Public exhibits.
8. Tours.
9. Games.
    - A. Season.
    - B. Ball—Size and weight.
    - C. Bat—Material and length.
    - D. Field—Diamond.
    - E. Men—Umpire, catcher, batsman, pitcher, etc.
    - F. Proceedings.
    - G. Innings.
    - H. Rules.

Questions.

Name the national games of England and United States.

Describe a game of baseball. 240.

Among what class of people is football played most extensively? Name some of the benefits derived from this game.

What sports can you name in connection with water?

What was the moral influence of the athletics in the early Grecian and Roman days?

Name some games which give intellectual training.

What is the general attitude of schools toward athletics?

State some reasons for increasing popularity of outdoor recreation.

Define umpire, coach, score, goal, racket, and alley.

Name a school of England famous for its athletic enthusiasm.

Who invented the game of basketball? By whom is it played most extensively? 243.

Give a list of games that may be played with cards.

When and why were the gladiatorial games forbidden? 1147.

The Philosophy of Sport.

Bear lightly on their foreheads, Time!
Strew roses on their way;
The young in heart, however old,
That prize the present day,
And, wiser than the pompous proud,
Are wise enough to play.

I love to see a man forget
His blood is growing cold,
And leap, or swim, or gather flowers,
Oblivious of his gold,
And mix with children in their sport,
Nor think that he is old.

I love to see the man of care
Take pleasure in a toy,
I love to see him row or ride,
And tread the grass with joy,
Or hunt the flying cricket-ball
As lusty as a boy.

All sorts that spare the humblest pain,
That neither maim nor kill—
That leads us to the quiet field,
Or to the wholesome hill,
Are duties which the pure of heart
Religiously fulfill.

Though some may laugh the full-grown men
May frolic in the wood,
Like children let adrift from school,—
Not mine that scornful mood;—
I honor human happiness,
And deem it gratitude.

And, though perchance the Cricketer,
Or Chinaman that flies
His Dragon-kite with boys and girls,
May seem to some unwise,
I see no folly in their play,
But sense that underlies.

The road of life is hard enough—
Bestrewn with snag and thorn;
I would not mock the simplest joy
That made it less forlorn;
But fill its evening path with flowers
As fresh as those of morn.

'Tis something, when the moon has passed
To brave the touch of Time,
And say, "Good friend, thou harm'st me not,
My soul is in its prime:
Thou canst not chill my warmth of heart:—
I carol while I climb."

Give us but health, and peace of mind,
Whate'er our clime or clan,
We'll take delight in simple things,
Nor deem that sports unman;
And let the proud, who fly no kites,
Despise us if they can!

—*Chas. Mackay.*

Commerce and Transportation

No! failure's a part of the infinite plan:
Who finds that he can't, must give way to who can;
And as one and another drop out of the race,
Each stumbles at last to his suitable place,
—*Crangles.*

COMMERCE is the exchange of goods or property between nations or the subdivisions of nations, such as states and provinces. Transportation consists of the industry of carrying goods and persons from one place to another. Collectively, commerce and transportation constitute important factors in the trade between states and nations.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA contains the information that is needed by students of commerce and transportation. It furnishes the material which is essential in the study of these branches of learning. For research work the student is referred to the following

Correlated Subjects.

Banking.
Boat.
Bounty.
Breakwater.
Canal.
Caravan.
Carrier.
Commerce.
Commercial Law.
Customs Duty.
Dam.
Dock.
Duties.
Electric Railway.
Erie Canal.
Exchange.
Excise.
Hanseatic League.
Harbor.
International Law.
Interstate Commerce.
Jetty.
Kaiser Wilhelm Canal.
Levee.
Money.
Navigation.
Navy.
Panama Canal.
Protection.
Railroads.
Road.
Sault Sainte Marie Canal.
Ship.
Steamboat.
Suez Canal.
Tariff.
Tramway.
Transportation.
Weather Bureau.
Welland Canal.

I. TRADE.

1. Origin and growth of trade.
    a. Earliest form of trade—What called.
    b. Conditions that gave rise to trade relations.
    c. Influences that have a tendency to develop trade, i. e., social, economic, industrial, climatic, etc.
2. Object and purpose of trade.
    a. To the individual.
    b. To society.
    c. To mankind in general.
3. Results of trade.
    a. Material results.
    b. Social and economic results.
    c. Intellectual results.
4. Trade Centers.
    a. Location—The determining factors.
    b. Growth—Upon what it depends.
    c. Earliest trade centers—Where found and why.
    d. Influence of trade centers upon the growth of towns and cities.

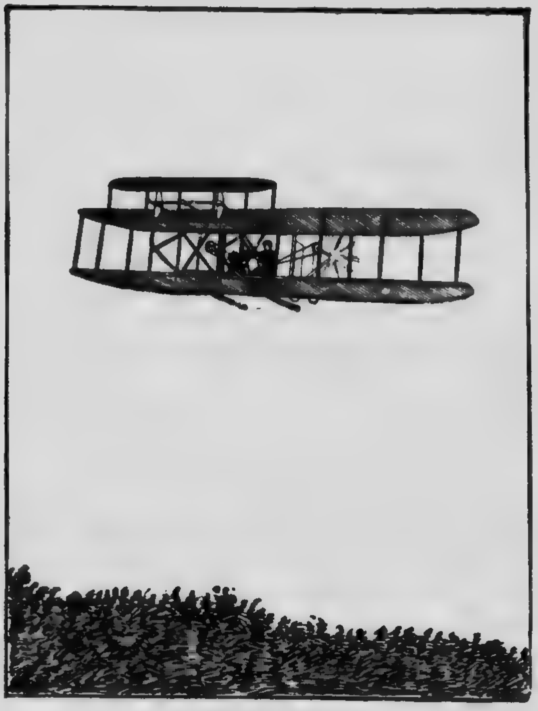
  - e. The world's greatest trade centers—Location and why so located.

5. New York as a trade center.
   - a. Why so located.
   - b. Connection with other great centers of commerce.
   - c. Character of the trade—Industries and business that developed as a result.
   - d. Chief factors in its growth.
   - e. Manufactures and markets.
   - f. Export and import trade.
   - g. Commercial importance.

6. Important trade centers of the United States.
   - a. Location with reasons for same.
   - b. Growth—Chief factors of.
   - c. Extent of territory reached.
   - d. Manufactures and markets.
   - e. Population and industries.
   - f. Export and import trade.
   - g. Commercial importance.

7. Trade centers of Canada and North America treated in a similar manner.

8. Trade centers of South America, Europe, Asia, Africa, Australia, and the isles of the Sea treated with special reference to location, industries and manufactures, population, and commercial importance.



FLYING MACHINE.

What wonders man has wrought
The recent centuries best to us portray;
In every field his studious mind has sought
And found things beautiful in wide array.
No more can Jupiter impale and blight,
Nor tyranny suppress the growth of mind;
To think is now a universal right,
Safe and secure in all mankind.
—*B. P. Holst.*

Suggestions.

1. Study the surface conditions of the countries where great trade centers are found. In a similar manner study climate, soil, vegetation, animals, and occupations of the people.
2. Locate places with special reference to New York and the great trade centers of the United States and North America.
3. Locate countries with special reference to the United States and North America.
4. Study the maps. Have the students make sketch and relief maps of their own.
5. Let the object be to study conditions, obtain facts, and fix places.

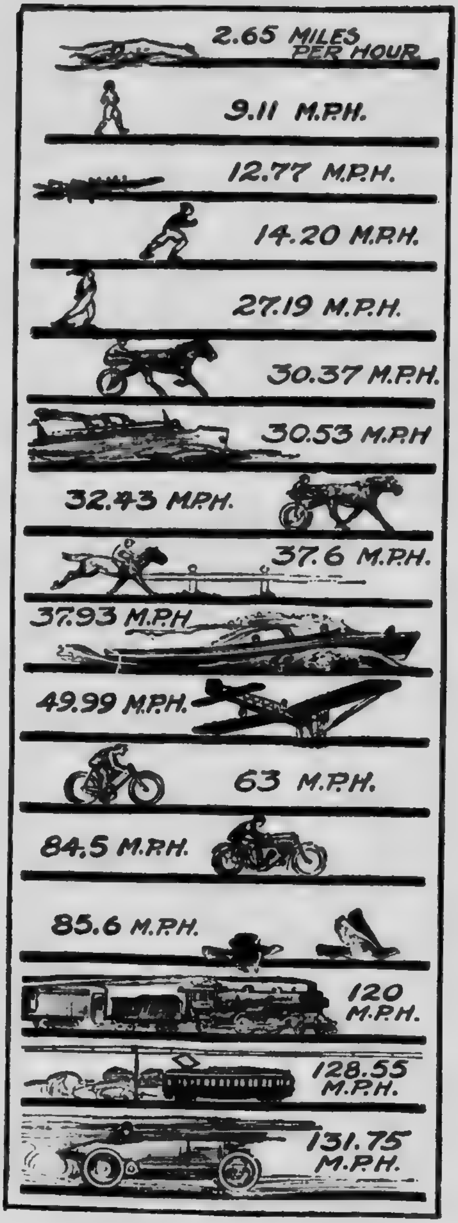


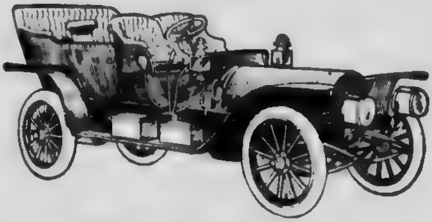
Diagram to show the general maximum speed attained by various means of transportation. The automobile has the highest record.

II. TRANSPORTATION.

1. Origin and growth of transportation.
    - a. Connection with the earliest forms of trade.
    - b. Earliest ways and means of transportation.
    - c. Inventions and discoveries that have influenced the growth of transportation.
    - d. Conditions that make transportation necessary.
2. Means of transportation.
    - a. Man—The earliest factor.
    - b. The ox, pack horse, and other animals used.
    - c. The cart, wagon, stage coach, steam cars, cable and electric cars, automobiles, and flying machines.
    - d. The raft, rowboat, sailboat, steamboat.
3. Ways of transportation.
    - a. Water transportation.
        - 1. Rivers.
            - a. Where found.
            - b. Source, direction, size and length, mouth, current.
            - c. Character and extent of country drained.
            - d. River systems.
        - 2. Conditions favorable to transportation.
            - a. Swift current.
            - b. Direct course.
            - c. Smooth, clean bed.
            - d. Good landings.
        - 3. Improvements necessary.
            - a. Removal of lodged timbers, boulders, and sand bars.
            - b. The building of dikes and levees.
            - c. Prevention of change in current or river bed.
            - d. The construction of wharves.
        - 4. The Great Navigable Rivers.
            - a. United States and North America.
            - b. South America, Europe, Asia, Africa, and Australia.

- c. Nature and extent of the country drained.
- d. How far navigable.
- e. Points of trade and trade centers connected.
- f. Climate, surface, soil, and productions of country drained.
- g. Character and amount of goods transported — Cost of transportation.

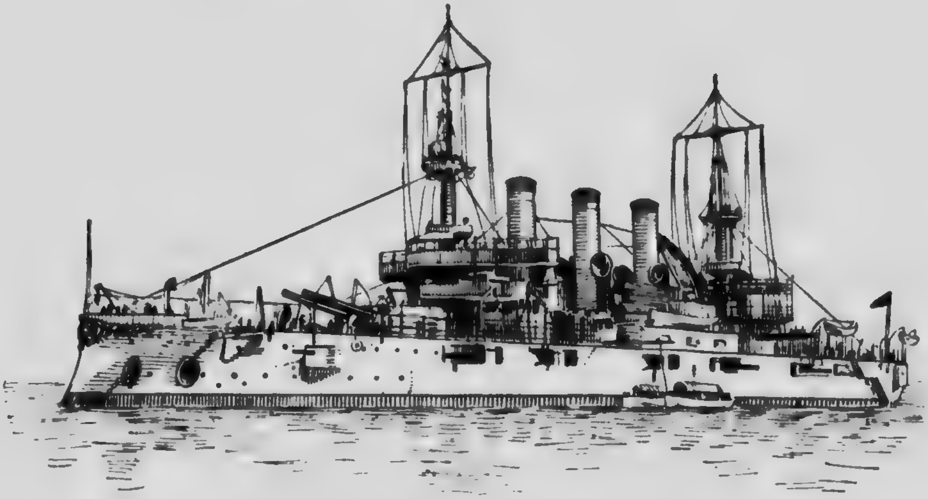
5. Lakes.
   - a. Where found.
   - b. Size and extent.
   - c. Inlets and outlets.
   - d. Nature and extent of territory reached — Climate, surface, soil, and productions of same.
   - e. The world's greatest commercial lakes—Trade centers reached by and through them.
   - f. Quality and quantity of goods transported.
6. Canals.
   - a. Origin and purpose of the canal.
   - b. Its connection with lake and river transportation.
   - c. How constructed—Depth of water, width of canal, and points connected.
   - d. Conduct of canal transportation — Extent and cost.
   - e. Growth and improvement in canal transportation.
7. Canals in Canada and the United States.
   - a. Where found.
   - b. When and how built.
   - c. Cost of construction.
   - d. Points connected.
   - e. How operated.
   - f. Extent and cost of transportation.
8. Canals in other countries treated in a similar manner.
9. The world's great canals.
   - a. Object and purpose.
   - b. Where found, when and how built.
   - c. Cost of construction and how operated.
   - d. Special aid to the world's commerce.
   - e. Points connected — Extent and cost of transportation.
   - f. Countries especially interested.


TOURING CAR (AUTOMOBILE).

10. Oceans, seas, bays, etc.
    - a. Location and extent.
    - b. Countries that border on them.
    - c. Countries separated by them.
    - d. The world's great seaports—Where and why so located.
    - e. The great oceans of commerce.
11. Conditions favorable to navigation.
    - a. Smooth surface.
    - b. Medium temperature.
    - c. Great depth of ocean currents.
    - d. Freedom from storms.
    - e. Favorable winds.
    - f. Good vessels.
    - g. Good harbors and wharves.
12. The great ocean routes.
    - a. Points of beginning.
    - b. Intermediate points.
    - c. Terminal points.
    - d. Goods shipped.
    - e. Time and cost of transportation.
    - f. A careful study of (a), (b), and (c), as to location, population, industries and manufactures, exports and imports.

13. Countries that trade with the United States.
    - a. Products produced and exchanged.
    - b. Products bought and sold.
    - c. Ocean routes most commonly used in transportation.
    - d. Steamship lines carrying the trade.
    - e. Seaports reached—Location, size, and importance.

14. Countries that trade with each other (Treated according to outline 13).



MODERN BATTLESHIP—THE CONNECTICUT.

SUGGESTIONS.

1. Trace rivers from source to mouth, describing surface and climatic conditions of countries drained, locating trade centers, naming products obtained at each, and giving the extent to which each is navigable.
2. Locate and trace rivers on maps in the books and on outline and relief maps drawn by the pupils.
3. Locate and trace canals on maps, show points connected, and emphasize use and importance of canal transportation.
4. Locate the oceans, giving latitude and longitude. Give climate and productions of countries touched. Study the character of the coast lines of countries and effect of same on transportation.
5. Make constant use of maps in tracing ocean routes and in locating seaports reached.

LAND TRANSPORTATION.

1. The old time trails.
    - a. Character of the surface of countries through which such trails passed.
    - b. Difficulties and dangers to be overcome in making transits.
    - c. Time required and expense incurred.
    - d. Character of the products transported.
    - e. Climate, soil, and productions of the countries in which trails occur.
    - f. Name, locate, and trace out the most important trails.
    - g. Points connected.

2. Wagon roads or trails.
    - a. Early wagon roads or trails.
    - b. Nature of the country traversed.
    - c. Difference between the wagon trail and the old time trail.
    - d. Comparative value of the two means of transportation in points of time, expense, and quality and quantity of goods transported
    - e. Points and trade centers connected.
    - f. Climate, soil, and productions of the country.
    - g. Improvements and the wagon roads of to-day.
3. Tramroads.
    - a. Origin and purpose.
    - b. Where found.
    - c. How built—Cost of construction.
    - d. Special use.
    - e. Countries in which the tramroads are found.
    - f. Points connected by them.
    - g. Advantages over the old time wagon road in points of time made and amount of goods transported.
4. Railroads.
    - a. Origin of the railroad.
    - b. Points of similarity and difference between the railroad and the tramroad.
    - c. Manner and cost of construction.
    - d. Growth and improvement.
    - e. Products transported, time saved, and effect on increased production.
    - f. Countries of the world in which railroads are chiefly found.
    - g. How railroads aid in the development of a country.
5. Trunk line railroads of the United States and North America.
    - a. Where found.
    - b. Points of beginning.
    - c. Intermediate points.
    - d. Terminal points.
    - e. Points connected with main line by branch road.
    - f. Careful study of (b), (c), and (d), as to location, population, manufactures and industries, export and import trade.
    - g. Time and cost of transportation.
    - h. Warehouses and depots—Necessity for.
6. Trunk line railroads of other countries; study according to outline (5).
7. Chicago as a railroad center.
    - a. Trunk lines.
    - b. Branch roads.
    - c. Extent of country traversed and points connected.
    - d. Character and amount of trade controlled.
    - e. Early connection of Chicago with the West and Southwest. How and over what routes (trails) were goods transported.
    - f. Connection with the East and Canada—Formerly and at present.
    - g. Warehouses and depots—Purpose and use of same.
    - h. Daily trains entering and leaving Chicago.

SUGGESTIONS.

1. Use maps freely in locating and tracing railroads. Make a special study of trade centers connected, as to location, size, and products obtained.
2. Locate and trace out the important trails, making a careful study of the conditions of the country, locating the points connected, and giving quality and quantity of goods transported.
3. Make a comparative study of the countries where railroads are maintained, and those without railroad facilities, as to trade, intelligence, and progress.
4. Let the aim be to show the growth and development of transportation, and how this has contributed to the progress and well-being of man.

Questions on Commerce and Transportation.

Define commerce and explain the two leading classes. 610.

How do the United States rank among nations in foreign commerce? Name our leading exports.

Name some helpful agencies for a thriving domestic commerce.

How was commerce carried on in the Middle Ages?

Which countries were great commercial nations of the ancient world? What reference is made in Isaiah to this?

Of what benefits are chambers of commerce?

When was the Department of Commerce and Labor created? Who is now secretary of this department?

What is commercial law, and what does it include?

Compare transportation by modern facilities with those of ancient times.

In which countries are caravans used most extensively? What are their chief articles of trade?

When did the rapid development of our domestic commerce begin?

What is the Interstate Commerce Act, and what benefits are derived from it? 1398.

Define tariff. Briefly discuss the tariff of Canada.

What is revenue? Name some important tariff bills.

Name and locate five great canals of commercial value.

Of what practical benefit will the Panama Canal be to the world?

How do climate, soil, and rainfall tend to affect the commerce of a community?

Tell of the leading railroad systems of the United States. Name ten important trade centers of the country.

What are trunk lines, depots, elevators, and warehouses?

Mention the important factors which cause the development of great cities.

Three Fishers Went Sailing.

Three fishers went sailing out into the West,
  Out into the West as the sun went down;
Each thought on the woman who loved him best,
  And the children stood watching them out of the town:
For men must work, and women must weep,
And there's little to earn, and many to keep,
Though the harbor-bar be moaning.

Three wives sat up in the light-house tower,
  And they trimmed the lamps as the sun went down;
They looked at the squall, and they looked at the shower,
  And the night-rack came rolling up ragged and brown;
But men must work, and women must weep,
Though storms be sudden, and waters deep,
And the harbor-bar be moaning.

Three corpses lie out in the shining sands,
  In the morning gleam, as the tide went down,
And the women were weeping and wringing their hands,
  For those who will never come home to the town.
For men must work, and women must weep,
And the sooner it's over, the sooner to sleep,
And good-bye to the bar and its moaning.

—Kingsley.

Language and Grammar

Languages are to be learned only by reading and talking, and not by scraps of authors got by heart.—*Locke.*

I. Language.

THE aim of language study is twofold: First, to teach the child to think; second, to teach him how to express his thoughts.

Throughout the first three grades it will be found that more attention must be paid to teaching the child to think than to his expression. For this reason the plan of work provides for a preponderance of free expression over expression with a view to correctness of form. For the same reason, by far the greater part of the time in the schoolroom is to be spent upon oral rather than upon written work, since free thought is hampered by the necessity of spelling and forming the letters involved in writing.

In first-year language, self-consciousness in the child must be avoided by every possible means. When he is telling a story, spontaneity must not be destroyed by interruption. Neither must correction be made after the story has been told. No greater fault can creep into a first-grade teacher's work than the inability to understand the sensitiveness of the child mind. Allow the child to speak freely and naturally, and to feel that he is making his story "interesting" to his hearers.

The delicacy of touch with which the successful teacher handles the story-telling period is shown in the following report of such a recitation: First, the teacher tells the story; second, she asks the pupils about the way they can tell it to make it interesting. She does not burden them with any outline of procedure, but endeavors to instill into their minds the idea that to make a story interesting they must not tell the details in a disjointed manner. This is the inculcation of the principle of unity in expressing thought, and prepares the child for the paragraph idea in his written work taken up later.

The teacher's story has been one of a child enjoying a ride into the country in a donkey cart. She supposes the case of the child telling his story, apparently with all its details rounded out and complete, when he suddenly remembers that on the drive out the donkey had upset the cart! She asks the class why this would not be a good way to tell the story, and the child, being properly led, readily learns to recognize the fact that it is not interesting to tell of this one incident of the donkey after everything else has been told about it. In other words, the interest has been destroyed by the child's failure to tell one of the most important details at the proper time.

By means of this supposed case the teacher prepares the way for the reproduction of the story next day, when, almost invariably, the child will endeavor to make his version "interesting."

Though it is not wise to speak to the pupil of his spoken English in the story-telling period, an important part of the first-grade teacher's work is to teach the use of correct forms. How, then, is it to be done? By supplying single sen-

The Tulip.

The tulip is a beautiful flower. It has a bulb and many roots The stem and the leaves are green. I can see the bulb, the stem and the flower. Can you see them? The flowers have many colors, but this one is red.

First Grade.

My Spring Vacation.

My vacation began the last of March and ended Sunday, April ninth.

Monday I helped mamma wash the clothes and she gave me a nice red apple. It was sweet and juicy.

Wednesday morning I didn't want to get up, because I was so sleepy. After breakfast I played with kittie and later took my little sister out in her go-cart. We went out for a ride nearly every day last week.

Last Sunday I went with mamma to the cemetery. It was a fine day.

I am learning how to sew. Here is an apron mamma helped me make.

WRITTEN WORK—FIRST AND SECOND GRADES.

tence exercises in which this correction may be made, the teacher may hope to see the habits of correct speech formed. The child's natural use of words in storytelling, therefore, instead of furnishing a target for criticism, should be looked upon rather as an index of the progress he has made in acquiring correct habits through other means.

Exercises which are to train the child in the use of correct English should, as said before, be of single sentence length only. Having given his sentence, he is ready to dwell upon it if attention is called to any error he may have made.

The best kind of exercise is in the form of a game. For instance, in teaching the correct use of the parts of the verb *see,* the teacher may devise such a game as the following: Placing an apple on the table, she says, "I see an apple," but quickly removing it, puts the question, "What did you see, Bernice?" If Bernice replies, "I seen an apple," the teacher explains that "seen" is one of those words that are afraid to be out alone, and so needs a helper along. Bernice then corrects her statement to "I have seen an apple," and the teacher asks her to say it in still another way. This brings out, "I saw an apple." Such an exercise may continue around a class with different objects shown.

Another game may be played by having a pupil seat himself in a chair and then leave it. The class turns toward him and asks of the next child, "Was it he?" to which the reply is made, "It was he." Two pupils may then take chairs and the class asks, "Was it they?" receiving the reply, "It was they." One pupil may now get up and ask, "Was it I?" "No," replies the class, "it was he," or "it was they," as the case may be.

The ingenuity of the teacher readily supplies similar games for the correction of various errors in speech. Bringing the play language into the schoolroom by means of natural conversation in game form will furnish her with abundant material upon which to base the exercises.

As has been said, the first three grades present a problem calling for the keenest sympathy and skill in handling, but one may safely expect the child to have outgrown much of his sensitiveness by the end of the third year. Gradually, then, throughout the third grade, the teacher may, at her discretion, widen her field for direct criticism of spoken English. It may not be wise to interrupt continued oral discourse for the sake of correction, but this must necessarily, even in more advanced grades, be a problem for each individual teacher to solve in each particular case.

In written work, the correction of errors in spelling, capitalization, and form will occupy much of the time. The result will be that a finished piece of work, such as *My Spring Vacation,* or *Frost,* will represent the labor of ten days or more. As more time each day is spent on oral work than written, this estimate is probably lower than it should be.

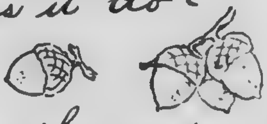
Both of these compositions were produced by using the question plan, though in the one entitled *Frost* the questions were more numerous and were kept as an outline, while the one whose subject is *My Spring Vacation* is a simple piece of work, in answer to the two main questions only, "When was spring vacation?" and "How did you spend it?" In writing stories or personal experiences, the questions are so much more obvious that their preservation is unnecessary.

The important feature of this plan is that the child formulates his own questions. These must be such as he would find it necessary to ask in order to secure desired information in case he were entirely ignorant of the subject. The teacher's help will, of course, be needed in training the child to select questions properly. These questions once arranged, the grouping of his "sentence answers" into paragraphs will follow easily.

Frost.

I. What is it?
II. How is it formed?
III. How does it look?
IV. When does it come?
V Of what use is it?
VI. What does it do?

Written Exercise.



Frost is frozen dew. When the vapor in the air touches something cold, it turns back to water. The drops of water then settle on different objects. such as grass and vines and trees, where they freeze to frost.

The color of frost is white. It looks like flowers and other beautiful things when it is on the window-pane. Frost comes in autumn, winter and spring.

Frost helps the squirrels to get the nuts from the trees. It makes the leaves fall on the flowers so the roots will keep warm when it snows. An early frost makes the corn easier to pick.

The frost paints the window-pane. It decorates the telephone wires. In the spring it sometimes kills the flowers.

WRITTEN WORK—THIRD GRADE.

Fourth-grade work differs little from third except that the question outline on *Frost* would be changed to statement form, somewhat as follows:

I. What frost is.
II. How it is formed.
III. What it looks like.
IV. Time of coming.
V. Of what use it is.
VI. What it does.

The theme proper also would differ little from the third-grade production, except, perhaps, in the amount of material used in the answers.

Fifth-grade theme work by the question plan might be illustrated by the following partial outline on *Corn:*

Question Outline.

I. What is corn?
II. How does the corn plant look?

Statement Outline.

I. What corn is.
II. Description of the corn plant, etc.

Second Question Outline.

I. What corn is.
II. Description of the corn plant.
  1. How tall is the corn plant?
  2. What kind of stalk has the corn plant?

Second Statement Outline.

I. What corn is.
II. Description of the corn plant.
  1. Height.
  2. Kind of stalk.

Sixth-grade work might differ in the dignity of the words used in the statement outline, such as *I. Definition,* instead of *I. What corn is.*

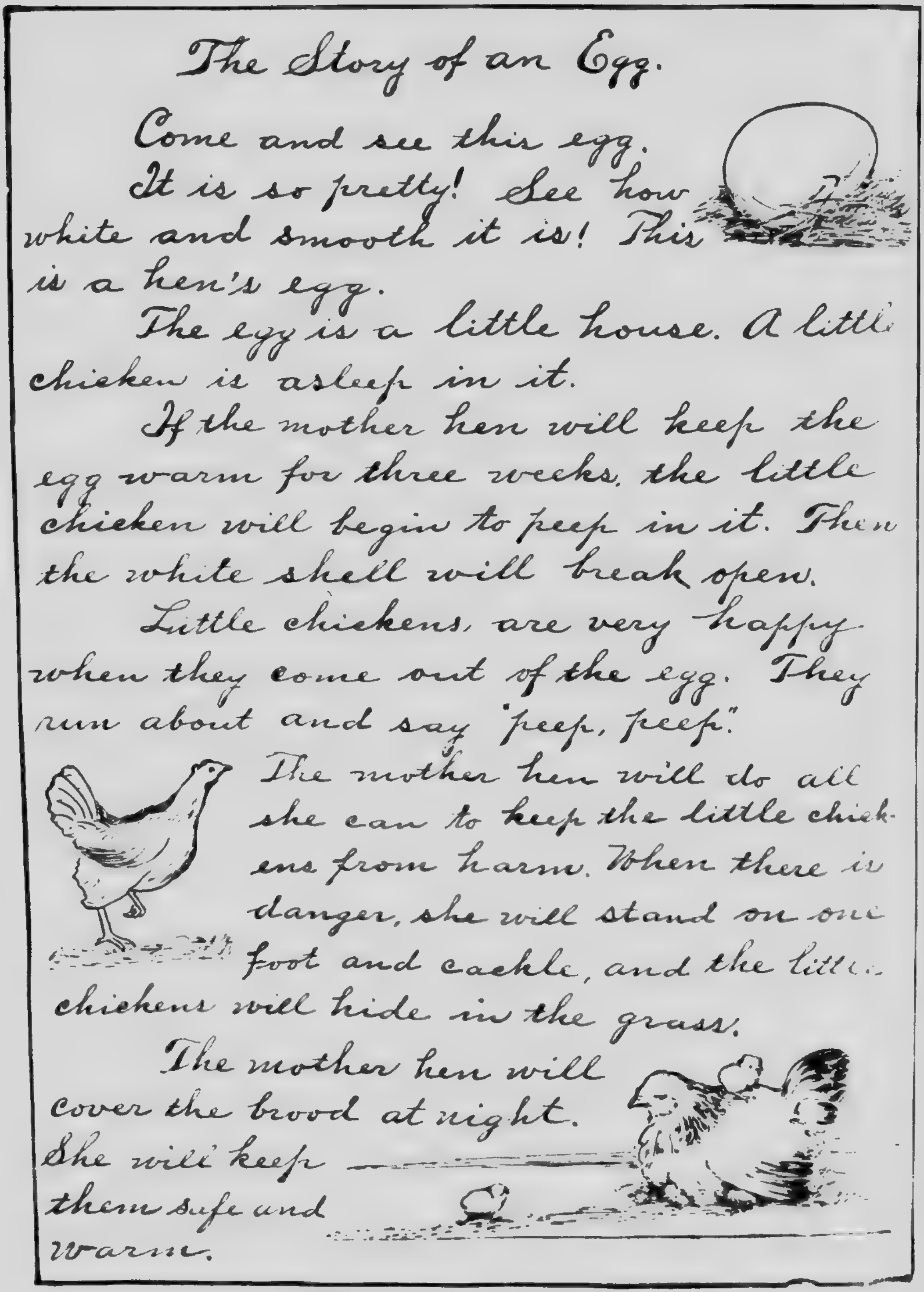
Seventh and eighth grades should continue theme writing according to outlines thus made and expanded, each further subdivision requiring an additional outline, just as the first sub-questions necessitated the creation of the SECOND QUESTION OUTLINE.

Since, beginning with the fourth grade, a language book is used and a grammar is introduced in the seventh grade, it will be unnecessary to go into further details in regard to language study pursued than is given in the outline following.

The outlines for the study of grammar are based on the principle that the larger divisions of the sentence should be studied first, an analysis of the parts of speech following.

First Grade.

I. SPOKEN ENGLISH.
  A. Spontaneous expression of experiences.
    1. Places seen or visited.
    2. Objects seen.
    3. Things that have happened.
  B. Free expression on subjects suggested by month
    1. September.
      a. Autumn.
      b. Fall flowers.
      c. Farmer's occupation.
      d. Position of sun about September 20.
    2. October.
      a. Birds flying south.
      b. Color of leaves.
      c. First frosts.
      d. Preparation of food by squirrels.
      e. Position of sun in sky, evening and morning.
    3. November.
      a. Early darkness.
      b. Position of sun in sky.
      c. Preparation of man for winter.
      d. Indian summer.
      e. Thanksgiving.



The Story of an Egg.

Come and see this egg.

It is so pretty! See how white and smooth it is! This is a hen's egg.

The egg is a little house. A little chicken is asleep in it.

If the mother hen will keep the egg warm for three weeks, the little chicken will begin to peep in it. Then the white shell will break open.

Little chickens are very happy when they come out of the egg. They run about and say "peep, peep."

The mother hen will do all she can to keep the little chickens from harm. When there is danger, she will stand on one foot and cackle, and the little chickens will hide in the grass.

The mother hen will cover the brood at night. She will keep them safe and warm.

WRITTEN WORK—FOURTH GRADE.

- 4. **December.**
    - a. Winter.
    - b. Position of moon in early evening sky.
    - c. Stars bright and clear.
    - d. Trees leafless.
    - e. Christmas.
- 5. January.
    - a. New Year..
    - b. Winter.
    - c. What farmers bring to town.
    - d. What merchants sell.
    - e. Sun's position in morning and evening.
- 6. February.
    - a. Lengthening of days.
    - b. Winter fuel.
    - c. Sun's position in sky.
- 7. March.
    - a. Spring.
    - b. Rains.
    - c. Sun's position about March 20.
- 8. April.
    - a. Spring.
    - b. Planting of grains and flowers.
    - c. Return of birds.
    - d. Man's preparation for spring.
    - e. Sun's position.
    - f. Flowers.
- 9. May.
    - a. Trees.
    - b. Leaves.
    - c. Flowers.
    - d. Crops growing.
    - e. What the farmers buy in town.
    - f. The position of the sun.

- C. Reproduction of stories heard and read.
- D. Dramatization of stories.
- E. Plays and games calling for expression.
    - 1. Single sentence games.
    - 2. Correction of vocabulary used in play.
- F. Memorizing of poems.
- G. Inculcation of principle of interest in telling of stories.

II. WRITTEN ENGLISH.

- A. Observance of rules for form.
    - 1. Left-hand margin.
    - 2. Title of story without period.
    - 3. Long paragraph form—Indentation of first line.
    - 4. Each sentence a paragraph.
- B. Capitalization.
    - 1. Beginning of sentences.
    - 2. Names of people.
    - 3. Titles: Mr., Mrs., etc.
- C. Punctuation.
    - 1. Period.
    - 2. Question mark.
    - 3. Comma to indicate pause.
- D. Material.
    - 1. Pictures shown.
    - 2. Flowers brought in.
    - 3. Subjects discussed orally.
- E. Form of written work.
    - 1. Single sentences.

Second Grade.

I. SPOKEN ENGLISH.
  A. Free expression of experiences.
    1. Material as in first grade.
  B. Free expression on subjects suggested by months, seasons, holidays, etc. (Information to be sought for by pupil at home or anywhere obtainable).
    1. Introduction of discussions about leaves.
    2. Introduction of discussions about seeds.
    3. Flowers studied as to—
      a. Structure (No technical names used).
      b. Color.
      c. Perfume.
      d. Habit.
      e. Shapes.
  C. Instruction in grammatical accuracy.
    1. Exercises requiring complete sentence containing correct grammatical forms.
      a. See, saw, seen.
      b. Do, did, done.
      c. Go, went, gone.
      d. Hear, heard.
  D. Enlargement of vocabulary.
  E. Reproduction of stories heard and read.
  F. Dramatization.
II. WRITTEN ENGLISH.
  A. Introduction of question plan.
    1. Subject presented by teacher—e. g., *Rice*.
    2. Questions asked by pupils as if entirely ignorant of subject.
    3. Arrangement of the three or four principal questions (Never more than four in this grade) on board by teacher, with pupils' help in deciding logical order.
    4. Written answers to questions—One sentence of reply to each question.
  B. Capitalization.
    1. Months.
    2. Days of week.
    3. Cities.
    4. Streets.
  C. Punctuation.
    1. Exclamation point.
  D. Material for written expression.
    1. Experiences.
    2. Books of stories, myths, poems, accounts of heroes, etc.
    3. Pictures.
      a. Knowledge of artist gained from teacher's talk.
      b. Description of picture.
    4. Things observed.
      a. Flowers.
      b. Fruits.
      c. Metals.
      d. Grains.
    5. Holidays—New Year, Christmas, etc.

Third Grade.

I. SPOKEN ENGLISH.
  A. Free expression about experiences.
  B. Reproduction of stories heard and read.
  C. Dramatization of stories and lessons.

II. WRITTEN ENGLISH.
- A. Question plan with following additions:
  - 1. More help from pupils in deciding on logical order of questions.
  - 2. Use of two or three sentences in reply to one question.
  - 3. Long paragraph form extended—All answers to one question in one paragraph.
  - 4. Title page and cover.
- B. Capitalization.
  - 1. In writing letters.
    - a. Heading.
    - b. Salutation.
  - 2. Beginning of line of poetry.
- C. Punctuation.
  - 1. Apostrophe in contractions.
- D Abbreviations.
  - 1. Measures used in arithmetic.
  - 2. Dr., Cr., Hon., Esq., Mr., etc.
  - 3. Ia., Ont., Que., Pa., Ill., etc.
- E. Material for written expression.
  - 1. Experiences.
  - 2. Letters.
  - 3. Books containing—
    - a. Fables, fairy stories, legends.
    - b. Stories of child life in other lands.
    - c. Stories of famous men and women.
    - d. Stories of adventure.
  - 4. Pictures.
    - a. Knowledge of artist.
      - (a) Introduction of library research to limited extent.
    - b. Description.
    - c. Meaning.
  - 5. Nature study.
    - a. Mounted specimens of flowers studied.
    - b. Mounted specimens of leaves studied.
    - c. Birds.
    - d. Grains.
  - 6. Physiology subjects.

Fourth Grade.

I. SPOKEN ENGLISH.
- A. Free expression of experiences.
- B. Reproduction of stories heard and read.
- C. Dramatization of stories and lessons.
- D. Conversational exercises.
  - 1. Between impersonated storekeeper and customer, contractor and laborers, gardener and men wishing to buy plants, etc.
- E. Correction of English used according to discretion of teacher.

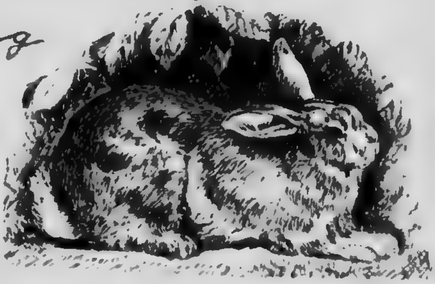
II. WRITTEN ENGLISH.
- A. Question plan continued (with following addition):
  - 1. Change of question outline to statement outline before writing of answers.
- B. Capitalization.
  - 1. In addressing letters.
- C. Punctuation.
  - 1. Comma in a series of words.
- D Various abbreviations.

The May Party.

Last Friday afternoon we had a May Party in the woods. The day was fine and the sun shone bightly.

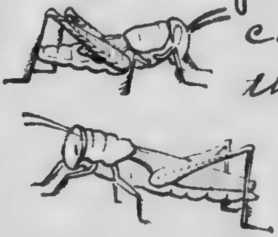
We ate a luncheon near the brook, under an oak tree. There we saw two squirrels. They were skipping among the branches.

Alice and I picked buttercups. They look like stars in the grass. I love yellow flowers. Do you? See the yellow butterfly



We saw a rabbit sitting near a hole on the hillside. It sat very still until we came near, when it ran away.

Henry found two grasshoppers. He showed them to me and Alice.



The grasshopper has a fiddle and can play it. I cannot see the fiddle, but I can hear it. The grasshopper is an insect. It can hop and fly.

E. Sources of thought for written expression.
    1. Experiences.
    2. Pictures.
    3. Letters.
    4. Books containing—
        a. Fables, fairy stories, and legends.
        b. Stories of child life in other lands.
        c. Stories of famous men and women.
        d. Stories of adventure.
        e. Stories of history.
    5. Nature study.
    6. Physiology.
F. Letter writing.
    1. Review of heading.
    2. Dates.
    3. Salutation.
    4. Body of letter.
    5. Ending.
    6. Signature.
    7. Folding.
    8. Addressing.
III. INTRODUCTION OF LANGUAGE TEXT-BOOK.

Fifth Grade.

I. SPOKEN ENGLISH.
    A. Free expression of experiences.
    B. Reproduction of stories.
    C. Dramatization of stories and lessons.
    D. Correction of English by teacher according to discretion.
II. WRITTEN ENGLISH.
    A. Question plan extended.
        1. First question outline.
        2. First statement outline—Question outline changed to statements.
        3. First sub-question outline—Questions asked under various statements in statement outline.
        4. First sub-statement outline—Sub-questions changed to sub-statements.
    B. Sources of thought for expression.
        1. Experiences.
        2. Books of stories and history.
        3. Nature study.
        4. Physiology.
    C. Letter writing.
III. USE OF LANGUAGE TEXT-BOOK.

Sixth Grade.

I. SPOKEN ENGLISH.
    A. Recitation.
    B. Reports.
    C. Discussions.
    D. Correction of spoken English at teacher's discretion.
II. WRITTEN ENGLISH.
    A. Practice in making and expanding outlines through one sub-statement outline.
    B. Letters.
    C. Experiences told in story form.
III. TEXT-BOOK IN LANGUAGE COMPLETED.

Seventh Grade.

I. SPOKEN ENGLISH.
    A. Recitation.
    B. Reports.
    C. Discussions.
    D. Correction of spoken English at teacher's discretion.
II. WRITTEN ENGLISH.
    A. Making and expanding outlines through one sub-statement outline.
    B. Letters.
    C. Experiences told in story form.
III. TEXT-BOOK IN GRAMMAR INTRODUCED.

Planting A Seed.

We planted a little seed in a wooden box.

The box contained some moist soil.

We put the box in a window, where the bright spring sunshine came in.

We gave the little seed some water.

In a few days the seed began to grow.

At first it swelled up and a little sprout appeared at the lower side.

Then a little root grew down deep in the soil.

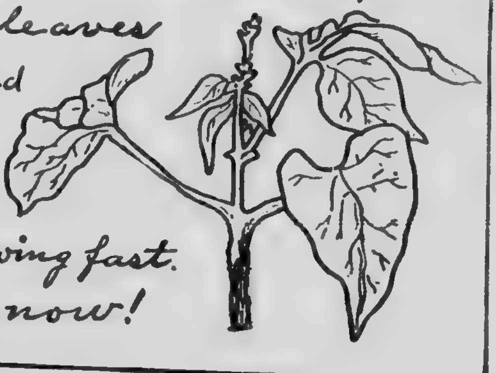
Soon a little green stem grew up into the light.

The stem was curved and somewhat enlarged at the upper end.

We were glad to see the green stem!

Soon after we saw two little leaves, and later two more leaves appeared.

The last two leaves were larger and unlike the first leaves.



Our bean plant is growing fast. See how large it is now!

II. Grammar.

The Sentence.

I. Classes.
- A. According to use.
  - 1. Statements (Declarative)—Ex., War is a conflagration.
  - 2. Questions (Interrogative)—Ex., Are you an American?
  - 3. Commands (Imperative)—Ex., Be brave.
  - 4. Exclamations (Exclamatory)—Ex., How fast the time flies!
- B. According to structure.
  - 1. Simple—Ex., Rome was built on seven hills.
  - 2. Complex—Ex., The plans which you present are very good.
  - 3. Compound—Ex., The fireman raised his ladder and the woman escaped.

II. Parts.
- A. Subject.
  - 1. Word.
    - a. Noun—Ex., The house was large.
    - b. Pronoun—Ex., He spoke well.
    - c. Gerund—Ex., Seeing is believing.
  - 2. Phrase.
    - a. Prepositional—Ex., Over the fence is out.
    - b. Infinitive—Ex., To love is human.
  - 3. Clause.
    - a. Noun clause.
      - w. Simple—Ex., That the man escaped is true.
      - x. Direct quotation—Ex., "Never say die," is our motto.
      - y. Indirect statement—Ex., That a man does not live by bread alone is well said.
      - z. Indirect question—Ex., Why he went will never be known.
- B. Modifiers of subject.
  - 1. Word.
    - a. Adjective—Ex., The beautiful tree was cut down.
    - b. Noun in possessive—Ex., The consul's reception was a brilliant affair.
  - 2. Phrase.
    - a. Prepositional—Ex., A box of oranges has arrived.
    - b. Infinitive—Ex., The way to win is to work.
    - c. Participial—Ex., Having broken his machine, the man stopped.
  - 3. Clause.
    - a. Relative.
      - x. Restrictive—Ex., A filter that is out of order is of no value
      - y. Descriptive—Ex., The hermit, who preferred his own hut, left our fireside.
      - z. Progressive—Ex., A man was found who understood the business.
    - b. Equivalent of relative clause introduced by a conjunctive adverb —Ex., The place where the tree stood is honored.
- C. Predicate.
  - 1. Verb.
    - a. Word—Ex., The king entered.
    - b. Phrase—Ex., The day was set.
  - 2. Modifiers of verb.
    - a. Adverb.
      - z. Ideas expressed.
      - 1. Time.
        - a. Word—Ex., Come now.
        - b. Phrase—Ex., In the morning they came.
        - c. Clause—Ex., We started before day dawned.

The Sistine Madonna.

The name of this beautiful picture is the Sistine Madonna It represents the Madonna holding a little child in her arms. This Child is the infant Christ.

The Madonna wears a loose gown and has a loose drapery which falls over her shoulder. She is holding the Child very tenderly.

The Child rests His head lovingly against His mother's shoulder. He has dark eyes and hair.

In the center of the picture, the Madonna is standing on a mass of clouds. On either side, a little below the Mother and Child, are the figures of a man and a woman representing St. Sixtus and St. Barbara.

At the lower edge of the picture are two little dimpled cherubs. They are looking upward at the baby Christ.

Look carefully into the faces of the Mother and the Child. They are very beautiful.

This picture was painted by Raphael. an Italian artist. It is now in the Dresden Gallery, Germany, where many go to see it.

WRITTEN WORK - SEVENTH GRADE.

2. Place.
a. Word—Ex., Stand here.
b. Phrase—Ex., Peanuts grow under the ground.
c. Clause—Ex., I shall go where the climate is milder.
3. Cause.
a. Word—Ex., Why did you come?
b. Phrase—Ex., It wore out because
c. Clause—Ex., We returned because a storm arose.
4. Reason.
a. Clause—Ex., It has rained, because the walks are wet.
5. Manner.
a. Word—Ex., It runs smoothly.
b. Phrase—Ex., The clerks came with alacrity.
c. Clause—Ex., We do not plow as our ancestors did.
6. Degree.
a. Word—Ex., He reads much.
b. Clause—Ex., We go as often as we can.
7. Purpose.
a. Phrase—Ex., He hurried for help.
b. Clause—Ex., He saves that he might go to college.
8. Result.
a. Clause—Ex., The sky was so cloudy that we could not see the comet.
9. Condition.
a. Phrase—Ex., In that case, we shall go.
b. Clause—Ex., If you will go, I will.
10. Concession.
a. Clause—Ex., Though I was tired, I went.
11. Assertion.
a. Word—Ex., Perhaps we shall go.
b. Phrase—Ex., In all probability, it is true.
12. Complementary.
a. Phrase,(Infinitive), They began to be interested.
b. Noun (Adverbial objective).
x. Idea expressed.
1. Place to which—Ex., He walked home.
2. Extent.
a. Of time—Ex., It lasted three hours.
b. Of space—Ex., We walked ten miles.
c. Of measure—Ex., It weighed a pound.
3. Complements.
a. Object complement.
x. Word.
1. Noun or pronoun—Ex., We picked the berries.
y. Phrase—Ex., The inventor expected to make his fortune.
z. Clause—Ex., The editor claimed that the story was true.
b. Attribute complement (subjective complement).
x. Word.
1. Noun, pronoun, or adjective—Ex., You will be secretary.
y. Phrase—Ex., To see is to believe.
z. Clause—Ex., Our conviction is that the jury will disagree
c. Objective complement (Predicate objective or objective attribute).
x. Word.
1. Noun, pronoun, or adjective—Ex., The flood made the river impassable.
y. Phrase—Ex., He danced himself out of breath.

- D. Modifiers of modifiers.
  - 1. Adjective.
    - a. Of noun—Ex., Interesting book.
    - b. Of pronoun—Ex., Eager for the work, he entered the room.
    - c. Of word or expression used as noun—Ex., Incessant murmuring.
  - 2. Adverbial.
    - a. Of adjectives—Ex., Very strong.
    - b. Of verbs—Ex., He swam rapidly.
    - c. Of adverbs—Ex., Somewhat slowly.
- E. Independent expressions.
  - 1. Vocatives (Nominative independent)—Ex., Hold my horse, boy.
  - 2. Expletive—Ex., There is a flaw in the work.
  - 3. Parenthetical expressions.
    - a. Phrase.
      - x. Prepositional—Ex., Between you and me, I don't believe it.
      - y. Infinite—Ex., To be frank, I don't like it.
      - z. Participial—Ex., Putting it briefly, he had no friends.
    - b. Clause—Ex., The winter will be a hard one (At least, we think so).
  - 4. Nominative Absolute—Ex., The parents having died, the children were left without support.
  - 5. Exclamations.
    - a. Interjections—Ex., Hurrah!
    - b. Other words or phrases—Ex., Happiness beyond compare!

Parts of Speech.

I. NOUNS.

- A. Classes.
  - 1. Proper—Ex., Richmond.
  - 2. Common.
    - a. Abstract—Ex., Virtue.
    - b. Concrete—Ex., House.
  - 3. Collective—Ex., Infantry.
  - 4. Verbal (Gerund)—Ex., Walking.
- B. Modifications.
  - 1. Gender.
    - a. Masculine; b. Feminine; c. Neuter.
  - 2. Number.
    - a. Singular; b. Plural.
  - 3. Case.
    - a. Nominative.
    - b. Possessive (Genitive).
    - c. Objective.
- C. Uses.
  - 1. Nominative.
    - a. Subject—Ex., The army was large.
    - b. Attribute complement (Subjective complement)—Ex., This is a city.
    - c. Apposition of a nominative noun—Ex., Mr. Green, the bookkeeper, is ill.
    - d. Independent.
      - x. Vocative—Ex., What is the matter, Henry?
      - y. Nominative absolute—Ex., The bell ringing, we started.
      - z. Exclamation—Ex., Heavens!
  - 2. Possessive.
    - a. Modifier of noun—Ex., The boy's book is here.

3. Objective.
- **a.** Object of verb—Ex., I saw the animals.
- **b.** Objective complement (Predicate objective, objective attribute)—Ex., The club made Tom their president.
- **c.** Object of preposition—Ex., It is on the table.
- **d.** Indirect object—Ex., Tell me the story.
- **e.** Appositive of noun in objective case—Ex., Mr. Brown sold Dan, his old horse.
- **f.** Subject of infinitive (Objective subject)—Ex., We believe the boy to be frank.
- **g.** Attribute complement of an infinitive when subject is objective—Ex., We believe him to be an honest boy.
- **h.** Adverbial objective—Ex., The darkness lasted five hours.

II. PRONOUNS.
- A. Classes.
  - 1. Personal.
    - a. Simple.
    - b. Compound.
      - y. Intensive.
      - z. Reflective.
  - 2. Demonstrative.
  - 3. Interrogative.
  - 4. Relative.
    - a. Simple.
    - b. Compound.
  - 5. Indefinite.
    - a. Distributives.
    - b. Comparatives.
    - c. Pronouns of number or quantity.
    - d. Compound indefinites.
- B. Modifications.
  - 1. Gender.
  - 2. Number.
  - 3. Case.
  - 4. Person.
    - a. First.
    - b. Second.
    - c. Third.
- C. Uses.
  - 1. Nominative.
    - a. Subject—Ex., I believe the story.
    - b. Attribute complement—Ex., It is I.
  - 2. Possessive.
    - a. Modifier of noun—Ex., His farm is large.
  - 3. Objective.
    - a. Object of verb—Ex., The court acquitted him.
    - b. Object of preposition—Ex., I walked with her.
    - c. Indirect object—Ex., Tell them the story.
    - d. Subject of infinitive—Ex., Do you know him to be the culprit?
    - e. Attribute complement—Ex., I know it to have been him.

III. ADJECTIVES.
- A. Classes.
  - 1. Descriptive.
  - 2. Limiting.
    - a. Numerals.
      - y. Cardinal.
      - z. Ordinal.
    - b. Articles.
    - c. Pronominal.
      - x. Demonstrative.
      - y. Interrogative.
      - z. Indefinite.
- B. Modifications.
  - 1. Comparison.
    - a. Degrees.
      - x. Positive.
      - y. Comparative.
      - z. Superlative.

- C. Uses.
  - 1. Attributive—Ex., A glorious sunset followed.
  - 2. Predicate.
    - a. Attribute complement—Ex., The roads are hard.
    - b. Objective complement—Ex., The workmen made the bridge safe.
  - 3. Substantive—Ex., Do not listen to the counsel of the wicked.

- IV. VERB.
  - A. Classes.
    - 1. According to form.
      - a. Transitive.
      - b. Intransitive.
    - 2. According to structure.
      - a. Strong.
      - b. Weak.
        - y. Regular.
        - z. Irregular.
      - c. Mixed.
  - B. Principal parts.
    - 1. Present.
    - 2. Past (Preterite).
    - 3. Past participle.
  - C. Modifications.
    - 1. Voice.
      - a. Active; b. Passive.
    - 2. Mood.
      - a. Indicative.
        - x. Tenses.
          - 1. Names.
            - a. Present.
            - b. Past (Preterite).
            - c. Future.
            - d. Future.
            - e. Present perfect.
            - f. Future perfect.
          - 2. Kinds.
            - a. Simple—Ex., You see.
            - b. Progressive—Ex., You are seeing.
            - c. Emphatic—Ex., You do see.
            - d. Interrogative—Ex., Do you see?
            - e. Negative—Ex., You do not see.
          - 3. Form.
            - a. Word—Ex., Hear.
            - b. Phrase—Ex., Will hear.
        - y. Person.
          - 1. First; 2. Second; 3. Third.
        - z. Number.
          - 1. Singular.
          - 2. Plural.
      - b. Subjunctive.
        - w. Tense.
          - 1. Of those subjunctive inflected regularly.
            - a. Present.
            - b. Past.
            - c. Present perfect.
            - d. Past perfect.
          - 2. Of those formed by use of special auxiliaries. Irregular and indefinite.

- 3. Time signification of tenses.
  - a. Varying according to ideas expressed.
- x. Person. } As in indicative.
- y. Number. }
- z. Ideas expressed.
  - 1. Independent forms.
    - a. Wish—Ex., Would I were there.
    - b. Potential—Ex., I might go.
    - c. Conclusion of conditional—Ex., I would if I could.
    - d. Exhortation—Ex., Let him be punished.
  - 2. Dependent forms.
    - a. Purpose—Ex., I went that I might see him.
    - b. Condition—Ex., If I were there, etc.
    - c. Imperative.
      - x. Tense.
        - 1. Present.
      - y. Person.
        - 1. Second.
      - z. Number.
        - 1. Singular.
        - 2. Plural.
    - d. Infinitive.
      - y. Tense.
        - 1. Present.
        - 2. Past.
      - z. Forms.
        - 1. Simple root infinitive—Ex., To move.
        - 2. Progressive—To be moving.
        - 3. Gerund—Ex., Moving (As a noun). Otherwise classed below.
- 3. Verbal forms.
  - a. Participle.
    - y. Tense.
      - 1. Present.
      - 2. Present perfect.
      - 3. Past.
    - z. Forms.
      - 1. Mood—In ing—Ex., Waving.
      - 2. Phrasal—Ex., Having waved.
  - b. Gerunds—Ex., Swimming is a healthful exercise.

D. Uses.

- 1. Notional verbs.
  - a. Finite form.
    - y. Transitive.
      - 1. Active.
        - a. With object—Ex., They captured a bear.
        - b. With objective complement—Ex., They made John captain.
      - 2. Passive.
        - a. Without attribute—Ex., The wolf was killed.
        - b. With attribute—Ex., The crown prince was made king.
    - z. Intransitive.
      - 1. Complete in itself—Ex., The horses ran.
      - 2. Copula with attribute complement.
        - a. Form of "to be"—Ex., The river was a torrent.
        - b. Other copulative verbs—Ex., The task seemed hard.

- **b. Infinitive.**
    - w. Noun.
        - 1. Subject of verb—Ex., To listen well is an art.
        - 2. Attribute complement—Ex., To see is to believe.
        - 3. Object complement—Ex., I wished to stay.
        - 4. Objective complement—Ex., He made himself seem ridiculous.
        - 5. Object of a few prepositions—Ex., None knew her but to love her.
        - 6. Appositive—Ex., His plan to steal the gold and hide it failed.
    - x. Adjective—Ex., The way to win is to work.
    - y. Adverb.
        - 1. Modifying a verb.
            - a. Expressing purpose—Ex., They work to win.
            - b. Complementary—Ex., You ought to succeed.
        - 2. Modifying an adjective—Ex., We were eager to be off.
        - 3. Modifying an adverb—Ex., Do not be too headstrong to see your faults.
    - z. Independent—Ex., To speak plainly, I blame you for your neglect.
- c. Verbal forms.
    - y. Participles.
        - 1. Adjective.
    - z. Gerunds.
        - 1. Noun.

2. Auxiliary.

V. ADVERB.

- A. Classes.
    - 1. According to use.
        - a. Limiting—Ex., He talks quietly.
        - b. Interrogative—Ex., When will you come?
        - c. Conjunctive—Ex., They went to Rome, where they remained.
    - 2. According to form.
        - a. Simple—Ex., Soon.
        - b. Flexional—Ex., Noisily.
        - c. Phrasal—Ex., At once.
    - 3. According to meaning.
        - a. Time—Ex., Obey now.
        - b. Place—Ex., Put it here.
        - c. Manner—Ex., He sings well.
        - d. Degree—Ex., The horse runs very fast.
        - e. Cause—Ex., Why did you come?
        - f. Assertion and denial—Ex., Yes, no.
- B. Modifications.
    - 1. Comparison.
        - a. Degree.
            - x. Positive.
            - y. Comparative.
            - z. Superlative.
- C. Use.
    - 1. Modifier of verb—Ex., She walked softly.
    - 2. Modifier of adjective—Ex., It is a very pretty hat.
    - 3. Modifier of adverb—Ex., The child danced very gracefully.

VI. PREPOSITIONS.
A. Classes.
1. Simple—Ex., To.
2. Compound—Ex., According to.
B. Use.
1. In "prepositional phrase"—Ex., On the floor.
2. As part of verb phrases—Ex., Approve of.

VII. CONJUNCTION.
A. Classes.
1. According to use.
a. Co-ordinating.
y. Word—Ex., And.
z. Double (Correlatives)—Ex., Both, and.
b. Subordinating.
y. Adverbial—Ex., If you will go, I will.
z. Introductory (Followed by noun clause)—Ex., He knows that you came.
2. According to form.
a. Simple—Ex., When.
b. Phrasal—Ex., As if.

VIII. INTERJECTIONS.
A. Classes.
1. Simple—Ex., Oh.
2. Secondary—Ex., Farewell.
3. Phrasal—Ex., Mercy on me!

Wynken, Blynken, and Nod.

Wynken, Blynken, and Nod one night
  Sailed off in a wooden shoe—
Sailed on a river of misty light
  Into a sea of dew.
"Where are you going, and what do you wish?"
  The old moon asked the three.
"We have come to fish for the herring-fish
  That live in this beautiful sea;
Nets of gold and silver have we,"
  Said Wynken, Blynken, and Nod.

The old man laughed and sang a song,
  As they rocked in the wooden shoe;
And the wind that sped them all night long
  Ruffled the waves of dew;
The little stars were the herring-fish
  That lived in the beautiful sea.
"Now cast your net wherever you wish,
  But never afraid are we!"
So cried the stars to the fishermen three,
  Wynken, Blynken, and Nod.

All night long their nets they threw
  For the fish in the twinkling foam,
Then down from the sky came the wooden shoe
  Bringing the fishermen home;
'Twas all so pretty a sail, it seemed
  As if it could not be;
And some folks thought 'twas a dream they'd dreamed
  Of sailing that beautiful sea;
But I shall name you the fishermen three:
  Wynken, Blynken, and Nod.

Wynken and Blynken are two little eyes,
  And Nod is a little head,
And the wooden shoe that sailed the skies
  It is a wee one's trundle-bed;
So shut your eyes while mother sings
  Of wonderful sights that be,
And you shall see the beautiful things
  As you rock on the misty sea
Where the old shoe rocked the fishermen three,
  Wynken, Blynken, and Nod.

—*Field.*

Rhetoric

NO race of people needs more to study the art of composition than does the American. Through the necessity of developing our country and bringing it to its present place among the nations of the world, the American citizen has not had much time or inclination for the development of art, either in himself or in his country. Even to-day the public is crying out for the practical, the business side of education, to the detriment of a broader culture than that measured by financial success.

If the child is of a practical turn of mind, his wit will become keener, his expression more diplomatic through the study of the best in literature and art. To the skillful, conscientious teacher everything is but a means to an end; and that end is the development of the child's needs in after life. It must be granted that the speaking and writing English of our average men and women does not meet their needs; blunt to the point of being discourteous, concise to the point of being ungrammatical, this English is the result of dwelling too much on the practical, or so-called practical courses.

Is grace of speech a necessary opponent of clearness? Is it not rather a charm which adds to effectiveness in expression? A live, original narrative, a well-worded description, or a bit of figurative language bordering even on the poetical, may seem not to bring any definite results in the struggle for bread and butter which engages the mass of our pupils, but clearness of tongue and pen can never fail to make that struggle easier. The remark is often made that we cannot hope to make novelists and poets of the larger proportion of our pupils and in consequence the detailed study of narrative, of description, of rhyme and meter is out of place in our public schools. If the majority had the genius of novelists and poets, the training in these things would not be so imperative. It is for the mind deprived of such natural gifts that the study of rhetoric is an absolute necessity if it is to put to use the knowledge acquired in other departments. Let u then shut our ears to these complaints, and fix our eyes on a larger future; future where the American may have the wit of the French and the soft grace the Italian in his speech, as well as the substantial worth of the harsh Americaized English.

But difficulties loom up in the immediate pathway to this future; difficulti which every teacher of rhetoric recognizes and solves according to his abilit No subject is so generally unpopular among students as rhetoric. This is t first trouble that the teacher needs to recognize, but with that recognition come also the realization that no subject need be less unpopular. Constant var in the work, tact in correction, a use of all the knowledge one has of human nat and a never-failing faith in results are some of the things that will banish difficulty.

How can the work be varied? Just a few suggestions may open the way other possibilities. The one which is most universal is the combination of cl study with rhetoric. While it is unwise to use the classic merely as an illus tion for the work in rhetoric, it is equally unwise to choose something w cannot be turned to account in this way. Many of our most famous Eng writers obtained their skill through reading the best in literature and trying reproduce the style of the great masters. Robert Louis Stevenson was not considered a very creditable student at Edinburgh University, but he knew what he was about in those days of apparently aimless browsing among books. Reading, then writing and rewriting with never-tiring energy, he acquired the marvelous grace and charm which placed him among the masters of style in our language.

If *narrative* is being studied in rhetoric, strengthen it by reading some good stories which illustrate the *where, when,* and *who* of an introduction; which bring out clearly the *climax*, the interpretation of the plot and character, and the purpose of description in plot development. The pupils will quickly recognize these elements, or the lack of them, and their own stories will begin to develop in a much more definite and correct manner. The work in *argument* can be varied and illuminated in much the same manner. Burke's *Speech on the Conciliation of the American Colonies* furnishes excellent material for advanced pupils in this, and some orators, as Webster, furnish the same for younger pupils. Let the pupil see clearly before him an illustration of proof through elimination, by precedent, by analogy, and many of his troubles will vanish. This will be particularly true, if subjects for debates on present-day topics are given out to be worked up in original examples of these different branches of argument.

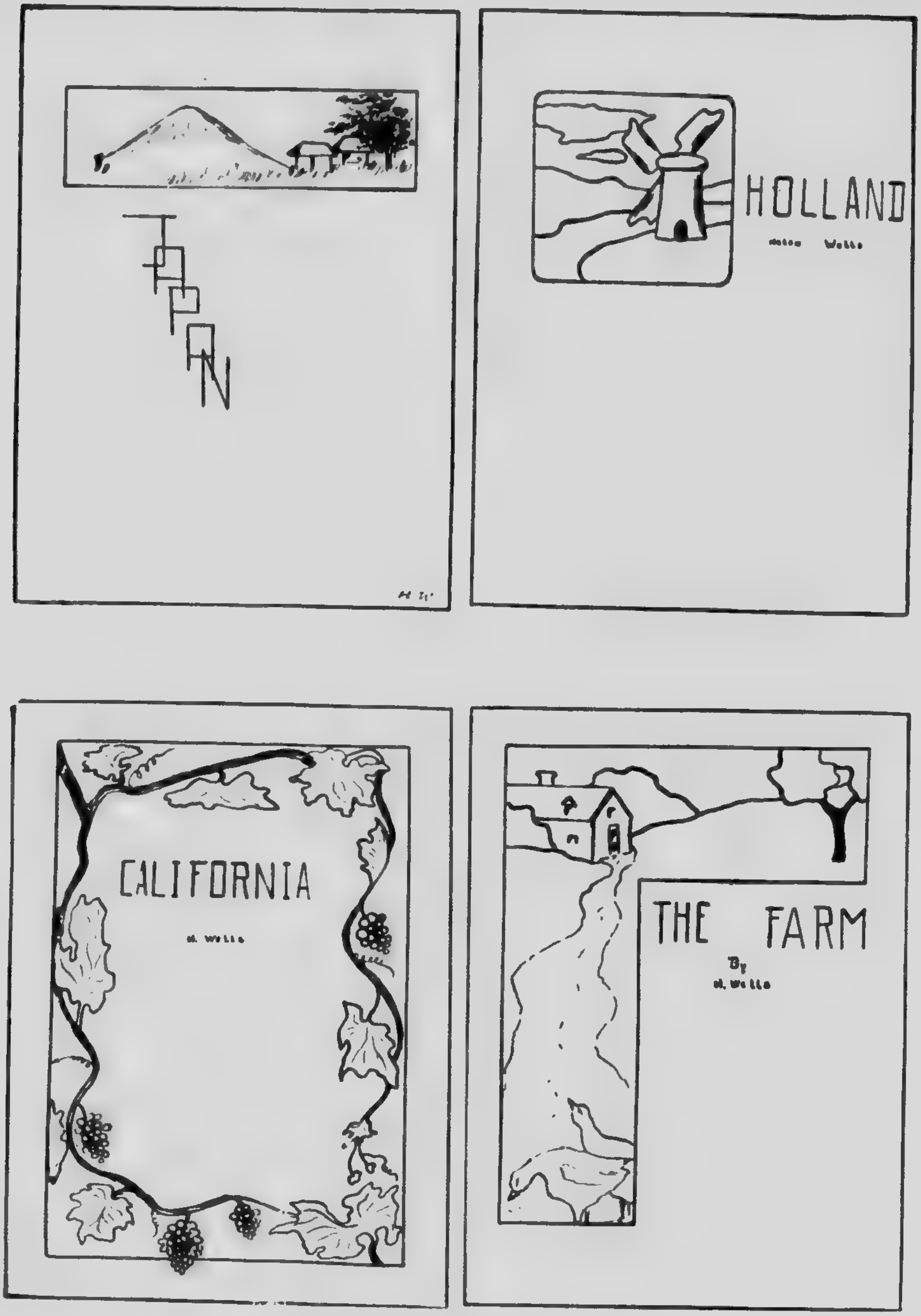
Oral English can be enlivened by having reports on current events. This work sharpens the pupil's wits by bringing him in contact with daily happenings. These reports can be varied by good "funny" stories, so told as to make the point come unexpectedly and skillfully. The ability to tell a good story is no mean acquisition, either in business or social life.

Too much adverse criticism is another reason for the unpopularity of rhetoric. The drudgery of writing must be made worth while by the reward of praise and appreciation by the teacher and fellow pupil. Constant correction of faults not only will kill all life in writing, but will increase rather than decrease the technical errors. The pupil comes to have his mind filled with these, and soon shifts the dreary weight of them to the teacher, who continues his monotonous red ink marks, not realizing that he is carrying the burden that should belong to the pupil.

Make it a rule never to read a poor theme before the class, except in rare instances where some weakness of the entire class may possibly be brought home to them. Read the good themes, and read them often yourself, giving to them your best expression and making the most of them in every possible way. Many pupils will awaken to possibilities within themselves by hearing their themes read as if there was something worth while in them. This plan has a good effect on the other members of the class, as the example of one of their members producing a theme which is interesting and unusual makes them question their power to do as well.

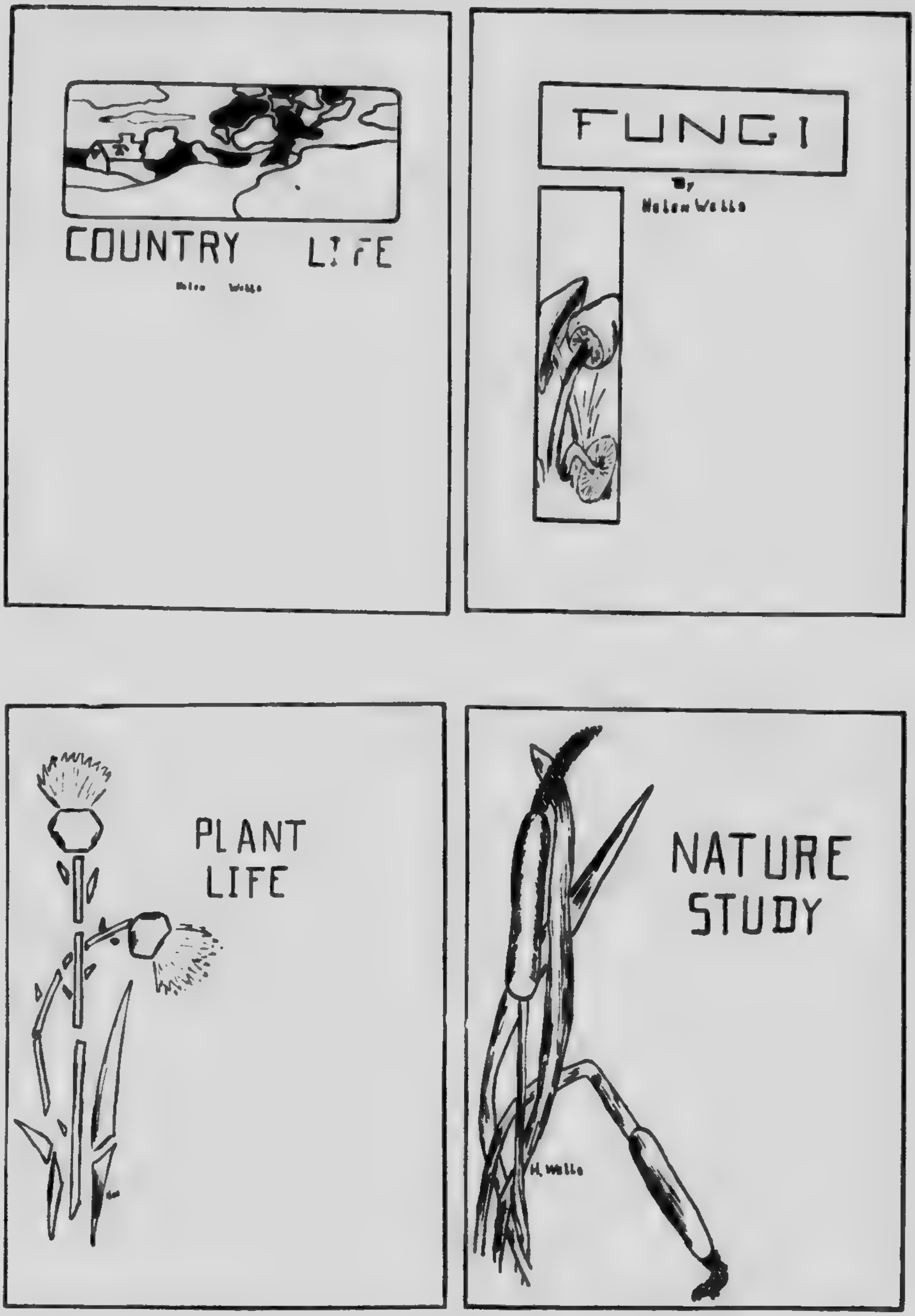
But faults must be corrected and the question arises, when can the disagreeable task be done the most advantageously? Certain mistakes are quite likely to prevail in classes and when such is the case the teacher can save time, and the sensitive feelings of the individual pupils, by putting a list of corrections for these before the pupils and then holding them responsible for future elimination of such errors. Again, a paragraph, very poor in sentence structure, capitalization, and punctuation, may be copied on the blackboard and the correction made by the class during a recitation period. It is always best to keep the name of the pupil who has written the faulty paragraph a secret: nothing is gained by humiliating him before the class and much may be lost.

This class work will do much toward eliminating individual correction, but there will always remain some whose work continues to be full of grammatical errors, faults of punctuation and capitalization. Private consultation seems to be the best solution of the difficulty with these, whether the faults be the result of carelessness or lack of ability, the pupil has to deal directly with you at these consultations and is bound to improve. No other method can so effectually clear a school of poor English as this private work, but, in order to do this and the rest of the work of the course, it is almost necessary for the teacher to have one hour a day, free from recitation, to give to these poor pupils.



SUGGESTIONS FOR THEME COVERS.

(Prepared from the work of Helen Wells, a pupil in the public schools at Marshalltown, Iowa.)



SUGGESTIONS FOR THEME COVERS.

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An impetus to good work can be given in these English classes by a definite, material aim in each chapter. Let the pupil feel that every step of the work is to be accounted for later in a final theme, which in length, material, and construction represents his advance. Have him bind this in the form of a book, using bristol board for a cover and decorating it with some design which is in keeping with his subject. It will be found that pupils will take unusual pride in these themes. The satisfaction of having produced something that is his own, a rounded whole in thought and structure, has an effect on a boy's character that works for good, not only in rhetoric, but in higher ideals in every line of his work.

In most schools the study of rhetoric extends over the first two years of English in the high school: as a general thing the course is divided by having narration and description in the first and exposition and argument in the second. A short study of poetry, its different classes and verse form for each, and a discussion of figures of speech are brought into the course as early as possible, in order that they may be understood in the study of classics.

In the introduction of composition work there are certain general points which the pupil needs to have brought forcibly before him. One is *What to write about* and the other is *How to write.* The first, the selection of the subject, involves two necessary things, interest and knowledge. No boy or girl can write on a subject in which he has no interest, and it follows that he cannot be interested without a knowledge of the subject. The *how* of writing is the entire theme of composition, but there are a few general rules which may help to clear the way of much indefiniteness in the beginning.

1. Spend some time thinking before attempting to write: settling definitely in your mind what is to be in the introduction, what points will be necessary to make clear the body of the theme, and how much of a conclusion will be needed.
2. Be sincere and simple: write what you know to be true and express it in as simple words and sentences as possible.
3. Work straight to your point, eliminating everything which does not clearly advance your thought.
4. When the theme is completed read it aloud: if the same word has been repeated the sound will be detected: if the meaning is not clear the fault may be found to be with the punctuation or with the faulty structure.

In the treatment of the main divisions of composition, the following outlines may furnish helpful suggestions:

Narration.

I. DEFINITION.
  A. Story-telling.
II. KINDS.
  A. Chronicle.
    1. Things to remember.
      a. Whom you are writing for.
      b. Selection of details for interest and accuracy.
    2. Suggestive topics.
      a. Diary of Ben Gunn (*Treasure Island*).
      b. Page from the *Record of John Alden.*
      c. A line a day *While Cruising the Ocean.*
      d. A page from the *Diary of Daniel Boone.*
  B. Incident
    1. Definition.
      a. A single action without complication in development and without formal introduction or conclusion.

2. Suggested topics.
   a. *The Lost Dime.*
   b. *A Stolen Ride.*
   c. *My Last Night's Burglar.*

C. Story.
  1. Parts.
     a. Introduction.
        1. Contents.
           a. The *when*, *where*, and *who* of the story.
        2. Expression in two ways.
           a. Complete explanation at beginning of story.
           b. A few details at first, with other necessary facts brought in, as necessary, through the story.
     b. Plot
        1. Parts.
           a. Incentive moment: the point where the interest is centered.
           b. Climax: the turning point.
     c. Conclusion.
        1. Modern stories omit the formal conclusion.
           2. Possible ways of handling.
              a. Point indirect moral.
              b. Connect ending with beginning by reference to time or place.

D. Method of character development in narrative.
  1. Through action.
  2. Through speech.
  3. Exercises to illustrate.
     a. Name three characters in *Ivanhoe* where character is shown through action; through speech; through the author's description.
     b. Which predominates in the following, action or character development; in which are they fairly balanced?
        1. *Treasure Island.*
        2. *Rip Van Winkle.*
        3. *Lady of the Lake.*
        4. *Silas Marner.*
     c. Write a short sketch in which a character is revealed through description, previous to the action.

Description.

I. DEFINITION.
  A. Representation of an image to the mind through words.
  B. Necessary characteristics.
     1. Point of view of writer.
        a. This may be directly stated or incidentally brought out.
        b. Only such details as could be naturally seen from the point of view selected can be brought into the description.
     2. Mood of writer, or assumed mood to give the article the correct tone.
     3. Details.
        a. Kind.
           1. Essential.
           2. Minor.
        b. Arrangement.
           1. According to natural position in space.

C. Purpose.
    1. To create an impression, as in a description of travel.
        Examples:
            a. Irving's *Alhambra.*
            b. Stevenson's *Treasure Island.*
    2. To create background for narratives.
    3. To indicate character.
D. Suggestions for studying.
    1. Give an oral description of some view or building to the class so that they can tell what it is without being told the name.
    2. Use the same plan with a person.
    3. Write a suitable background for a happy story: for a story depicting sorrow or crime.
    4. Tell a story which you have recently read, to illustrate well-arranged details of description.
    5. Write a page description of some place, introducing the elements of movement, color, and odor.

Exposition.

I. DEFINITION.
    A. The form of discourse which consists of explanation, free from personal prejudice, and arranged with the purpose of giving information.
II. KINDS.
    A. Definition, or the simplest form of exposition.
        1. Parts.
            a. Genus or class.
            b. Difference or details which distinguish this particular thing from others of the same class.
        2. Cautions.
            a. Be exact about expressing the genus in the definition. "A chair is for sitting in," or "Spring is when the frost comes out of the ground," may express the idea, but the *genus* is omitted and consequently the definition is faulty.
            b. Be careful in the selection of details: unless they distinguish the article from others of the same *genus* their effect is to confuse rather than to make clear.
    B. Complex ideas of action or machinery.
        1. Treatment.
            a. Through analysis.
            b. Through diagram.
            c. Through illustration.
    C. Formal exposition.
        1. Introduction.
            a. Explanation of subject.
            b. The arousing of interest.
            c. Plan.
        2. Body.
            a. Careful following of plan as indicated in introduction.
        3. Conclusion.
            a. Summary.
            b. Personal opinion.
            c. Possible future of object.

III. SUITABLE SUBJECTS FOR EXPOSITION.
- The Making of a Magazine.
- Liquid Air.
- The Aeroplane.
- How to Play Tennis.
- Marking off Golf Links.

Argument.

I. DEFINITION.
- A. Exposition which includes persuasion.

II. THINGS TO REMEMBER.
- A. In choice of subject.
    - 1. Within the pupil's experience or understanding.
    - 2. Concrete questions of present int[illegible]
    - 3. Questions with [illegible] capable of proof.
- B. Early determining of major and minor premises.

III. ORGANIZATION.
- A. Introduction.
    - 1. Explanati[illegible]
    - 2. History of [illegible]
    - 3. Outline [illegible]
- B. Brief.
    - 1. Well-establi[illegible]
        - a. Through [illegible]
        - b. Appeal to [illegible]
        - c. Argument f[illegible]
        - d. Through elimi[illegible]
- C. Conclusion.
    - 1. Summary.
    - 2. Persuasion, including show of emotion.

Study of the Paragraph.

I. REQUIREMENTS.
- A. Unity.
    - 1. That quality which admits of but one topic within a paragraph.
- B. Coherence.
    - 1. The arrangement of the separate thoughts in a paragraph so that the central theme is logically developed.
- C. Emphasis.
    - 1. Development of the theme in steps of added importance.

II. DIFFERENT METHODS OF DEVELOPING.
- A. By enumeration of details.
- B. By contrast.
- C. By time order.
- D. By cause and effect.
- E. By specific instance.
- F. By comparison.

III. EXTERIOR FORM.
- A. Indicated through indentation.

The Sentence.

- I. GRAMMATICAL CLASSIFICATION (See GRAMMAR for definitions and examples).
  - A. As to form.
    - 1. Simple.
    - 2. Complex.
    - 3. Compound.
  - B. As to use.
    - 1. Declarative.
    - 2. Imperative.
    - 3. Exclamatory.
    - 4. Interrogative.
- II. RHETORICAL CLASSIFICATION.
  - A. Loose.
    - 1. Definition: A sentence that permits of an ending in two or more places with complete sense.
    - 2. Example: We rode on, scarcely stopping for food, and with no feeling but an all consuming fear.
  - B. Balanced.
    - 1. Definition: A sentence made up of two members, similar in structure but often contrasted in meaning.
    - 2. Example: You can lead a horse to water, but you can not make him drink.
  - C. Periodic.
    - 1. Definition: A sentence that does not complete the main thought until the close of the sentence.
    - 2. Example: The great sorrow he had had, the terrible sacrifices he had made, the loss of the friends whom he had trusted, swept across his memory.

Figures of Speech.

- I. DEFINITION.
  - A. Variations of the literal or ordinary forms of expression by imaginative expression.
- II. FIGURES OF PRACTICAL SERVICE.
  - A. Simile.
    - 1. Definition.
      - a. An expression of resemblance between two different things, usually introduced by such words as *like* or *as.*
    - 2. Example.
      - a. "I wandered lonely as a cloud
        That floats on high o'er vales and hills."
  - B. Metaphor.
    - 1. Definition.
      - a. An implied comparison.
    - 2. Example.
      - a. "All the world's a stage."
  - C. Personification.
    - 1. Definition.
      - a. Attributing life to inanimate objects.
    - 2. Examples.
      - a. The brook *murmured.*
      - b. The *treacherous* rocks were hidden.
      - c. Oh Solitude, where are thy *charms?*

Reading

> Some read to think, these are rare; some to write, these are common; and some read to talk, and these form the great majority. The first page of an author not unfrequently suffices all the purposes of this latter class, of whom it may be said, they treat books as some do lords; they inform themselves of their titles, and then boast of an intimate acquaintance.
> -*Colton.*

READING is the basis of all self-development in education. This truth is so evident that its very familiarity makes us careless of its significance. Until the full importance of reading is realized by teachers many boys and girls will continue to grow into men and women whose *self-development* is seriously hindered by their inability to read intelligently. How large a per cent. of our people at present can grasp the thought of any printed pages beyond that of the daily newspaper, the modern novel, or the rhyme of a medium poet? The heavier reading which develops the reasoning power and the sense of justice, that does so much toward producing broad-minded citizenship, lies untouched by the mass of our citizens. We are so accustomed to thinking that the kind of reading one does is dictated by his tastes that the possibilties of an early formation of better tastes are forgotten. The man or woman who finds difficulty in pronunciation and in a clear interpretation of thought through the expression of the voice in this simple, everyday reading is crippled to such an extent in attempting heavier reading that the hard work and time involved make him abandon it.

How far are the public schools responsible for this lack of intelligent reading? It seems a long stretch from the stumbling reading of a lazy, sturdy lad of ten to that of the man who exerts the rights of citizenship and should be equipped to investigate those rights for himself and others. But if that lad, when grown to manhood, still reads in a stumbling, laborious fashion; if through his inability to read he has been unable to make any progress in self-development, then it behooves the teachers of our country to take up this question of poor reading and solve it.

Nor does the question of self-development cover the whole result of good or poor reading. How many people are there of our acquaintance who can read to us for half an hour in a simple, easy manner so that the thought remains with us, clear cut and vivid from the reader's interpretation? The number is limited, and, if limited among people who have at least completed our public school course, what can be said of those who drop out at the close of the grammar grade work? They are the ones who come from illiterate families where the necessity of broadening the mental view is paramount. One good reader, alive and well instructed, although only a pupil of our grades, can do more toward easing the burden of illiteracy in his home, toward lifting the ideals of that home, than any other influence that we can send to it from our public schools.

The foundations of self-development, the possibilities of giving pleasure in a social way, the moral and intellectual influence possible and the growth of a better citizenship through more intellectual reading, are far-reaching visions, to which to lift our eyes from the droning, stammering half-hour reading lesson. But if once our eyes can catch the gleam of the vision, an illumination will flash upon the dullness that will scatter it.

In looking back over our own school days, is it true that we find the memory of the reading hour anything but one of definite action or enthusiastic interest? How many reading classes do we find to-day in which a definite plan of progress is carried out with enthusiasm by the teacher and responded to in the same manner by the pupils? What was the matter in the past? What is the difficulty at present? One answer may be formed in the very apparent ease with which many teachers dispose of the reading hour. No attention is given to the preparation of the day's assignment in many cases and the "next lesson" is droned through on successive days or "taken over," if there are too many mispronounced words. Many realize the need of different and better reading classes, but they have been unable to accomplish the result desired. The following plans and suggestions have been tried by those who have found them successful in arousing interest and securing results. Perhaps, the application of them more generally will remedy the difficulty for others.

General Directions.

First of all there must be an awakening of the teacher to the view point of the pupil. The lesson so simple to the teacher, so sifted free of all ideas in numerous preceding classes, is still a fresh field of interest to the pupil if he is skillfully led into it. Approach him through the thought and very often the interpretation of that thought will cause him to give the sentence correct expression in reading it. It is a matter of minor importance, whether the boy stands on both feet or one, whether the book is held correctly or not. Let him alone, if he has the thought himself and can read it to the class. Gradually the influence of the printed page and the interest in it will lead the boy to forget his body and then the battle is won. Follow with a few directions about standing and holding the book, explaining the added ease with which one's voice carries, if the head is up and the body is erect. Bring one of the best pupils to the front of the room to illustrate these points and follow with the others, introducing the poorest ones unexpectedly so that they will not be embarrassed by waiting their turn. The plan will not only interest the class in seeing the truth concerning the carrying of the voice, but the pupil has come before the class. As that is the next step to be accomplished, it is wise to do it without any announcement of the fact.

No really good work in reading can be done until the pupil faces his audience. Until then the recitation on his part is for the teacher, who is a taskmaster and critic in the pupil's eyes. Give the boy an audience interested in the same thing that he is and he will soon become alive to the sense of power which comes from holding the attention of others. To keep that attention he must give the class something to think about and he soon sees that a listless pronunciation of words does not have the desired effect; he must know the thought back of the words and give it proper interpretation.

There are those in every class who can get the thought in silent reading, but who are entirely without the ability to give that thought expression through their voice. These are the ones it is most necessary to consider and it is for these the teacher must bring in the mechanics of reading. Every teacher should know these mechanics well enough to recognize which one will remedy the difficulty in a child's expression. Only the simplest and most practical are illustrated here. A complete table is given at the close of the chapter for those who care to go into the matter more deeply.

Time.

Every class has the pupil who reads too fast or too slow. Merely telling him to read the paragraph over and read more slowly will not correct this fault. Unless he grasps the reason, the connection between the thought and the correct expression of the thought, he will go back to his characteristic rapid or slow reading at the next opportunity. The trouble with him is that he doesn't know the meaning of *Time* in connection with reading. Teach him this and you have given him a remedy for this trouble. The best way to do this is to give him contrasting passages to read, one directly after the other so that he can see the necessity for thinking of time in his utterance of the printed verse. First take the following:

Through all the long midsummer day
The meadow sides are sweet with hay.
I seek the coolest sheltered seat
Just where the field and forest meet,—
Where grow the pine trees tall and bland,
The ancient oaks austere and grand,
Amid fringy roots and pebbles fret
The ripples of the rivulet.

Or this:

The curfew tolls the knell of parting day;
The lowing herd winds slowly o'er the lea;
The plowman homeward plods his weary way,
And leaves the world to darkness and to me.

Any child who has the mental ability to read the words of these verses can easily be taught that the thought in them is not suited to rapid expression. Follow these with the succeeding selections to show that there is the same connection between thoughts based on swift action and the vocal expression of the thought, that there is between the above meditative themes and their deliberate expression.

Meanwhile, impatient to mount and ride,
Booted and spurred, with a heavy stride
On the opposite shore walked Paul Revere.
Now he patted his horse's side,
Now gazed at the landscape far and near,
Then, impetuous, stamped the earth
And turned and tightened his saddle girth;
A hurry of hoofs in a village street,
A shape in the moonlight, a bulk in the dark,
And beneath, from the pebbles, in passing, a spark
Struck out by a steed flying fearless and fleet:
That was all! And yet, through the gloom and the light,
The fate of a nation was riding that night:
And the spark struck out by that steed, in his flight,
Kindled the land into flame with the heat.

This decided contrast brought before the pupil will at least show him the necessity of varying his time expression. After the drill on these exercises, it would be well to take the school reader and have the pupils select lessons which demand particular attention to this quality. Let the pupil explain his reason for the selection to the class: the connections between the thought and its rapid or slow utterance. Follow with several recitations in which contrasting lessons illustrating the idea of time are taken up. These lessons should come from the reader in everyday use and anywhere in the book where the examples best answer the purpose.

Pitch.

The same psychological process, as that discussed under *Time*, is involved in the development of the relations between the thought of a lesson and the pitch of a pupil's voice. Just as we have pupils who read everything fast or everything slow, we also have these who read all selections on a high pitched voice or others who never vary from a low tone. Ask the pupil the following questions:

What are you reading about? What is the principal thought?

If you were talking to some one on such a subject, would you use the same tone you are using in reading about it?

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Follow these questions with the examples below, where it is evident the voice must grow tense with excitement or soften in sympathy. After these examples go back to the lesson in the book, establish the connection between the thought and the pitch of the voice, and have the lesson read by those who can do it best. Proceed to have contrasting lessons selected throughout the book, until every member of the class begins to modulate his time according to the necessity demanded by the thought.

Hark to the bugle's roundelay!
Boot and saddle! Up and away!
Mount and ride as ye ne'er rode before;
Spur till your horses' flanks run gore;
Ride for the sake of human lives,
Ride as ye would were your sisters and wives
Cowering under their scalping knives.
Boot and saddle! Away, away!

The barley-harvest was nodding white,
When my children died on the rocky height,
And the reapers were singing on hill and plain,
When I came to my task of sorrow and pain,
But now the season of rain is nigh,
The sun is dim in the thickening sky,
And the clouds in the sullen darkness rest
Where he hides his light at the doors of the west.
I hear the howl of the wind that brings
The long drear storm on its heavy wings;
But the howling wind, and the driving rain
Will beat on my houseless head in vain:
I shall stay, from my murdered sons to scare
The beasts of the desert and fowls of the air.

Quality.

When the more evident questions of *time* and *pitch* are out of the way, the elusive one of *quality* can be taken up. The quality of a tone depends entirely on the emotions excited in the reader by the thought of the selection before him. Children are so strongly imitative that the necessary emotion can be aroused in them by hearing the selection read properly. This possibility can be strengthened greatly if the atmosphere is created before by an explanation of the circumstances connected with the writing of the selection. As an example of this, Robert Louis Stevenson's *Requiem*, written when he was broken in health and yet echoing his sturdy love of life and its beautiful pleasures, will appeal to boys and girls.

Under the wide and starry sky,
Dig the grave and let me lie,
Glad did I live and gladly die
And I laid me down with a will.

This be the verse you grave for me;
Here he lies where he longs to be;
Home is the hunter, home from sea,
And the hunter home from the hill.

But the human voice has as many qualities as the heart has emotions. Some of these have been given names by professional instructors in reading. Out of this list several can be brought before grade pupils with exceedingly good results. It is better to banish the technical terms—Orotund, Guttural, Aspirate, etc.—and put in their places names suggested by the emotion to which they give expression, such as *grave* and *deep*, *bright* and *ringing*, *harsh* and *stern*, etc. The examples given below will help the pupil to understand and to apply these terms; if he understands definitely what makes his reading monotonous and can give a name to the quality he should bring into each selection, he has taken a long step toward variety of expression in his reading.

Illustration of *Bright* and *Ringing* Quality.

When the frost is on the pumpkin and the fodder's in the shock
And you hear the hyouck and gobble of the struttin' turkey-cock,
And the clackin' of the guineas, and the cluckin' of the hens,
And the rooster's hallylooyrs as he tip-toes on the fence;
O it's then's the time a feller is a-feelin' at his best,
With the risin' sun to greet him from a night of peaceful rest,
As he leaves the house, bare-headed, and goes out to feed the stock,
When the frost is on the pumpkin and the fodder's in the shock.

—*Riley.*

Dark or *Covered* Tone.

So live, that when thy summons comes to join
The innumerable caravan, which moves
To that mysterious realm where each shall take
His chamber in the silent halls of death,
Thou go not, like the quarry-slave at night,
Scourged to his dungeon; but sustained and soothed
By an unfaltering trust, approach thy grave
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams.

—*Bryant.*

Sympathetic Quality.

I stood and watched by the window
  The noiseless work of the sky,
And the sudden flurries of snow-birds,
  Like brown leaves whirling by.

And again I looked at the snow-fall,
  And thought of the leaden sky
That arched o'er our first great sorrow
  When that mound was arched so high.

Up spoke our own little Mabel,
  Saying, "Father, who makes it snow?"
And I told of the good All-father
  Who cares for us here below.

—*Lowell.*

Light, Soft Tone.

It was many and many a year ago,
  In a kingdom by the sea,
That a maiden there lived whom you may know
  By the name of Annabel Lee;
And this maiden she lived with no other thought
  Than to love and be loved by me.

And this was the reason that, long ago,
  In this kingdom by the sea,
A wind blew out of a cloud, chilling
  My beautiful Annabel Lee;
So that her high born kinsman came
  And bore her away from me.

—*Poe.*

A complete table of these qualities will be found at the close of this chapter, with the help of which, and the start made with the above work, the more delicate tone qualities can be developed.

Force.

Closely allied to quality of tone is *force*, but the relationship permits a distinct difference to exist, one which the teacher should clearly appreciate, even if it is thought best not to confuse the pupil with another term. Just as the *quality* of the tone interprets the kind of emotion, *force* interprets the amount of energy to be used in voicing that emotion. This is the most difficult element to be secured in reading and can only be obtained when the pupil has the thought of the lesson so stimulated by enthusiasm that his listlessness vanishes and his expression comes spontaneously. At this point, activity, not only mental, but physical as well, must inspire the class. A swift drill in physical exercises preceding the lesson, with abundance of fresh air then and throughout the recitation, will do much toward banishing the indifferent attitude of the class. Begin the reading hour with concert reading of the selection given below, and follow that by individual reading of the same. The directions used in the development of the other expressional and tone qualities can be followed here with regard to taking up the lessons together that have the need of force in their interpretation.

Hark! 'tis the voice of the mountain,
  And it speaks to our heart in its pride,
As it tells of the bearing of heroes,
  Who compassed its summits and died!
How they gathered to strife as the eagles,
  When the foeman had clambered the height!
How with scent keen and eager as eagles,
  They hunted them down for the fight!

Hark! through the gorge of the valley,
  'Tis the bugle that tells of the foe;
Our own quickly sounds for the rally,
  And we snatch down the rifle and go.

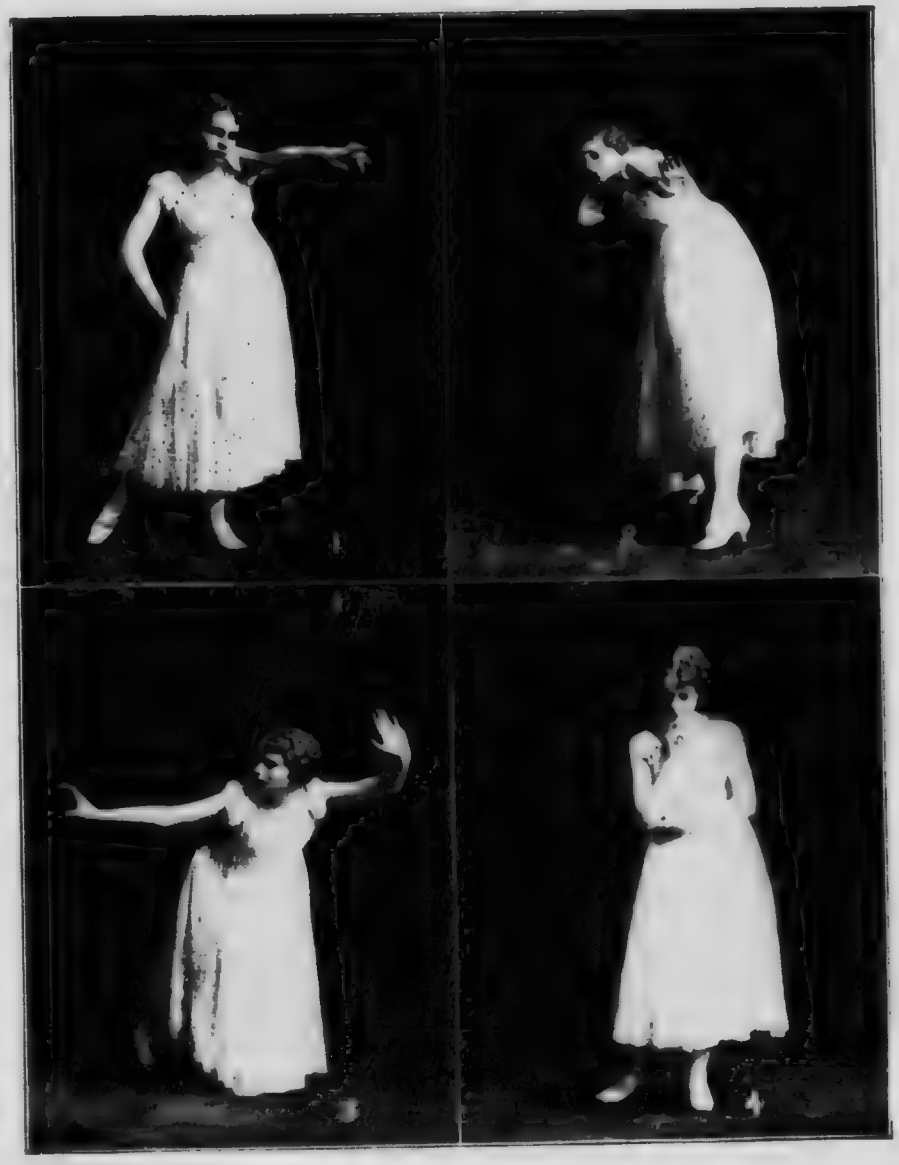
. . . .

The British, the Tories are on us;
  And now is the moment to prove
To the women whose virtues have won us,
  That our virtues are worthy their love!
They have swept the vast valleys below us,
  With fire, to the hills from the sea;
And here would they seek to o'erthrow us,
  In a realm which our eagles make free!

Detailed Shades of Expression.

If the main thought of the reading can be produced through an understanding of *time, pitch, tone, quality,* and *force,* the meaning within the sentences will often take care of itself. But if the pupil fails to do this, the matters of *grouping,* of *subordination,* and *emphasis* should be dwelt upon.

GROUPING is the setting off of words which make a thought unit. Just as punctuation is a guide to the grammatical structure of the sentence, *grouping* is a guide to the thought structure. Children who are naturally good readers will do this instinctively, but there are those who will need help. In this matter definite direction is impossible, for the child must *feel* the thought group. One of our best instructors in reading says there is only one universal rule about grouping: "There is never more than one emphatic word in a group. If a reader decides to emphasize an additional word, he will instinctively make two groups out of what he had before made but one." Go over the lessons with the pupils in the recitation period until they begin to pick out the groups correctly. Let them use their individuality just as far as possible. It will be found that the boy or girl who is an expressive reader will quickly see the advantage of careful grouping: the careless one will not, but the habit will grow upon him unconsciously from the work of the others.



Method Book. Opp. 354

CORRECT POSITIONS IN PUBLIC READING.

1. Designation
2. Disdain.
3. Fear.
4. Meditation

UWO EDUCATION LIBRARY UWO EDUCATION LIBRARY

From "Incident of the French Camp."

You know we French | stormed Ratisbon; |
A mile or so away, | |
On a little mound, | Napoleon
Stood | on the storming day, |
With neck out-thrust, | you fancy how |
Legs wide, | arms locked behind, |
As if to balance the prone brow |
Oppressive | with his mind. | |

It will be seen from this example that the grouping corresponds in places to the punctuation, while in others it does not. The same will be seen from the following selections from the *Village Blacksmith:*

He goes on Sunday to the church, |
And sits among his boys; |
He hears the parson pray and preach: |
He hears his daughter's voice, |
Singing in the village choir, |
And it makes his heart rejoice. |

Toiling, | rejoicing, | sorrowing, |
Onward through life he goes; |
Each morning | sees some task begun, |
Each evening | sees it close; |
Something attempted | something done, |
Has earned a night's repose. |

After the subject of *grouping* is understood, the next logical step is that of *subordination.* This is one of the most important devices of expression, as it solves for the hearer the thought value of the different groups: the important thoughts standing out clearly in the reader's tones, the modifying or subordinate thoughts dropping into the background by being given a lower tone. In reading the following selection, notice how the words in *Italics* express subordinated thoughts and how the voice must be toned to express them:

"Rob, *having sold out his share in MacDougall's boat,* bought jerseys and black boots and yellow oilskins for his companions; so that the crew, *if they were slightly built,* looked smart enough as they went down to the slip to overhaul the *Mary of Argyle.*"—From *The Four Macniols* by William Black.

Expression does for the words within the group what grouping and subordination do for the thought within the unit. Not much difficulty can come from this after the work on grouping has been well done. However, it may be well to give the pupil a few sentences in which to mark the important words.

Reading by Grades.

Intermediate.

The general directions, given previously, should be begun in these grades and carried on as far within each year as the mental development of the pupils will permit. It will be found that they will grasp the logic of the directions very well, but putting them into continued use will take not only days but months.

The material within the school reader, first of all, should be *classified* by the teacher according to the order of development of the vocal and expressional qualities of the pupils. The interest of the class will be increased by using the lessons as illustrations of these different steps. This will lead the pupil to feel that the day's work is meant to meet his particular need and therefore must appeal to him more than an arbitrary assignment of the "next lesson."

The use of the dictionary should begin as early as the fourth year. Careful directions and frequent drills in the use of the dictionary, in some cases occupying entire reading hours, will do much toward simplifying later work. The following suggestions are given to aid in making definite requirements:

I. Each pupil should own his own dictionary, if possible, and it should be the same as that of the other members of the class, so that the teacher will be enabled to make definite and uniform requirements.

II. Each division of a dictionary has individual value and the teacher should carefully call attention to and explain each part.

III. Continual and thorough study should be given the table of diacritical marks (see page 127).

IV. Because of the modern methods of teaching reading in the primary grades, young pupils do not know the relative position of the letters in alphabetical order. Have the class turn rapidly from letter to letter in the dictionary, noticing the proportion of space given to each and the arrangement of words in sequence of these letters.

V. The fact that different meanings are given under a word needs explanation; sentence work illustrating the use of the word in different ways ought to be given.

The reward for the time and labor given to the study of these things will be more than repaid in the improvement in accuracy of study habits, especially in the desire of the pupil to pass from the dictionary to other reference books, and in the satisfaction of having reduced a difficulty to a tool which will be the pupil's help through life.

Attention to correct articulation begins, of course, in the primary grades, but the necessity of that attention increases rather than decreases throughout the intermediate grades. It is generally a mistake to interrupt a pupil while he is reading to correct a fault in articulation, as he loses the thought as well as the tone necessary for the expression of that thought, and becomes discouraged and embarrassed. A few minutes, given to the entire class, at the beginning of the hour, and continued daily in a systematic way so long as the pupils respond well, will be found to go far toward producing distinct enunciation. Do energetic concert work. Have individuals follow with the same according to their needs. It should be impressed upon the pupils that distinct speech is a most valuable asset in social and business conversation as well as in reading. Such expressions as,

"Whatcha doin'?" (What are you doing?)
"Wher'd yego?" (Where did you go?)
"Cancher come?" (Can't you come?)
"Don'tcher know?" (Don't you know?)

are constantly current on our streets and on our school playgrounds. We are likely to consider these the earmarks of illiteracy when we see them in printed conversation. Why any more so there than in speech?

It is impossible to submit a *program* for a reading hour in these grades, or any other, that can be followed at all times. On some days articulation demands more time than on others; sometimes the drill on expression must take precedence; and again the assignment of the following day's lesson may take up very nearly, if not all, the period. The last is particularly true if the pupils have reached the place where they need the stimuli of new difficulties in expression or material. Above all else the teacher should have a definite line of development planned for the class, a distinct goal to be reached at a certain time, and that goal should mark the acquirement of certain things in expression, articulation, poise, and study habits, rather than the covering of so many lessons in so many days.

However, it is necessary to have a plan of action for each recitation and follow it as a rule, varying only when necessity demands. In a half-hour reading recitation the following division of time has been found successful:

Articulation.................	Three minutes.
Oral Reading...............	Twenty-two minutes.
Assignment.................	Five minutes.

The suggestions previously given in detail for expression and articulation can be applied under this program. The question of assignment, however, has not been discussed and it is on this part of the hour that the success of the other divisions depends. So far as the material will permit the teacher should make her assignment include the points below:

I. List of Words.
  A. New.
    1. Pronunciation.
    2. Meaning.
  B. Old words in new sense.
II. Questions on Thought and Expression.

Hawthorne's *Golden Fleece* has been selected for an example of assignment; the work on this should cover a week, as the interest aroused is worth the time.

Assignment of "The Golden Fleece."

In what part of your dictionary can you find the following words? Jason, Iolchos, Centaurs, Cheron, Aesop, Pelias, Dodona, Argus, Colchis, Aetes, Medea, Cadmus, Neptune, Argonauts, Circe, and Vulcan? If you cannot find them in your small book where can they be found in the larger one? Look them up, mark them, and bring in some definite information concerning them. Pronounce and mark the following from your own dictionary: malice, garb, turbulent, quest, obeisance, suspended, meed.

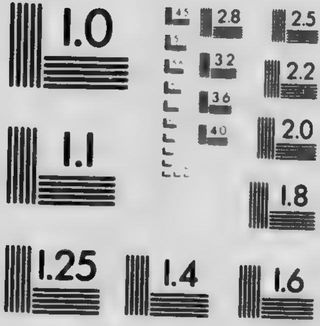
Questions: Is this a fairy story, or a fable? Look up the word *legend,* before making your decision. What things are told about Jason in the early part of the story which help to form your decision? Why is the story called *The Golden Fleece?* Why is Jason made to cross the turbulent stream? Why were the people so excited over the appearance of Jason? How is King Pelias shown by his own speeches to be a wicked man? By what Hawthorne says about him? Select five words that seem best in describing the oak. Can you see the ship pulled by fifty youths in the southern seas? What does it look like? Can you picture to yourself the scene with King Pelias, Medea, and Jason? What does the room look like? How can you tell how Jason's, the King's, and Medea's speeches should be read? Where, in the encounter with the brazen bulls, should you read rapidly? Do you blame Medea for working against her father? Why is the oak forest where the fleece hangs made so dark? What are the best words used in describing the fleece and the dragon? Is this the last time Medea sees Jason? Does Jason get his throne? What places in the story should be read as if you were frightened? Find paragraphs that can be made clearer to the class by reading parts in a lower tone than the rest? How do you know that Jason is brave? That he is honest? Is he any greater in his character at the close of the story than at the beginning? Why?

No place has been given on the division of time in the recitation program for *Sight Reading,* for it is not always well to destroy the unity of the period by introducing a lesson foreign to the thought of the one prepared. Very often, however, sight reading can be introduced to strengthen the work in expression, for variety, to stimulate new interest, and to supplement material which the pupils have been unable to find. The last can be illustrated in connection with *The Golden Fleece,* where others of Hawthorne's stories which take up Jason can be used.

Sight reading is the best test in articulation that can be given. Have a paragraph read by a pupil and then call on different members of the class for the substance of it. They will see for themselves how difficult it is to know what is being read by one whose enunciation is poor. Another good device in sight reading is to pass the book from pupil to pupil, each reading but a sentence. Still another is to divide the class into groups, and give each a story to read aloud to the members of his group.

MICROCOPY RESOLUTION TEST CHART

ANSI and ISO TEST CHART No. 2



APPLIED IMAGE Inc

All the formality of school can be put aside at this time, and the pupils can be gathered in different parts of the room, so that the reading of each group will not annoy the others. With care and tact the teacher can make this very profitable, both in sight reading and in the development of the self-reliance of the school. By passing gently and continuously from group to group the teacher can keep sufficient supervision to maintain quiet and interest and still appear to be leaving the pupils to their own government.

Course of Reading for Third, Fourth, and Fifth Years.

THIRD YEAR.

Third Reader.
Stories of Great Americans for Little Americans (Eggleston).
Selections from *Grimm's Fairy Tales* (I. and II.).
Stories from *Garden and Field* (I. and II.).
Hawthorne's *Golden Touch.*
Stories of Old Greece.
Puss in Boots.
Child Life in Many Lands.

FOURTH YEAR.

Third Reader.
Story of Washington.
Story of Lincoln.
Story of Pioneer Life.
Aunt Martha's Corner Cupboard.
Alice in Wonderland.

FIFTH YEAR.

Fourth Reader.
Stories of American Life and Adventure (Eggleston).
Stories from Hawthorne's *Wonder Books.*
Black Beauty (Sewell).
Little Lame Prince (Mulock).
Rab and His Friends.
Heroes of Industry.

Reading of the Grammar Grades.

Almost the entire nature of the work done in these grades depends upon the amount of thorough preparation in articulation, expression, and habits of study in the earlier years. If the foundation work has been all that it should be, the advance course in the grammar schools should be a pleasure to both teacher and pupils: if that foundation has been neglected, there is nothing to do but to go back to the beginning and give what has not been given before. Fortunately the added age which comes with these school years makes it possible for the pupils to grasp the necessity of the work and to become ready to apply it in a shorter time than younger pupils can. On the other hand, these added years have brought added self-consciousness which makes the question of expression a difficult one, especially so with the half-grown, awkward boy. Arouse a vigorous interest among the better pupils, watch your chance, and when the rough, uncouth boy is off his guard in a moment of interest, sweep him into line by having him read a minor part in some simple dramatization: pay no attention to him, but take it as a matter of course that he can and will do the part assigned. And he will. See that he has a longer part to read very soon. Continue this work until the time seems ripe for him to read alone. Nothing but infinite tact, a tact that ignores anything unusual in the boy's attitude, can overcome the difficulty this boy has in reading. But it can be done and the self-respect, the character development that comes to him in the process, is an ideal worthy to keep in mind.

Constant drilling on articulation is necessary through these grades, connecting the work here with outside practical life as much as possible. The use of the dictionary, of course, must continue now and always, as a life habit. In these grades more responsibility can be placed on the pupil in the selection of the words to be looked up. A committee can be appointed from the class, now and then, to make the lists of words for the remainder of the class to look up. Individual lists can also be required and afterward discussed in class.

If the course of study supplies nothing but the school readers, the question of interest in these years will be greater than if suitable classics were included. Much can be done, however, toward study growth, if the material in the readers is classified by the teacher. This classification falls, ordinarily, into the following four groups:

First. The easy lessons which are within the grasp of the pupil when he first enters the grade and which appeal to him because of his ability to handle them.

Second. The selections which are taken from the best writers and contain thoughts of which the growing boy and girl are just beginning to be conscious as being true in life's philosophy. Connect this philosophy with present-day life, with public events and joys and sorrows of neighborhood associations. These are the lessons the pupils will choose again and again because of the universal appeal to human nature.

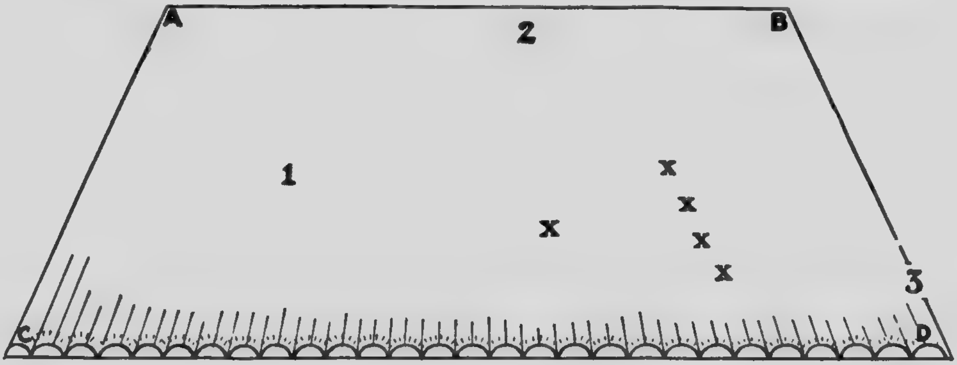
Third. The group which has interesting and new information. Here outside material can be brought to the class by the pupil and read by him to the class, or passed around to be used as sight reading.

Fourth. The lessons which contain material too difficult in thought and wording for the class. This group does not always exist, and the number of lessons in it, under any circumstances, can be greatly reduced by working the pupils up to it through the other groups in the reader. However, it is wiser to abandon the most difficult than to mystify the pupils by difficulties beyond their comprehension.

A great many of our boys and girls drop out before entering the high school. If for no other reason than this, the reading of classics should be encouraged in the grammar grades. They are most valuable for the development of good reading as the pupil loses himself in the interest of the story, or the sustained emotion of some great speech finally gains its hold on him and his expression comes much more naturally than in the short selections in the reader. It is well to begin with prose stories in this work and follow them with narrative poems, closing the work with, at least, one drama, *Julius Caesar* preferably, as the line of interest is a single one and easily followed. The assignment for the study of the narratives can be based on that of *The Golden Fleece*, given under the work in Intermediate Grades, only increasing the demands for expressive words and study of character. The more formal terms of *introduction, setting, climax, character development*, etc., can gradually be introduced and with bright pupils in the upper grades it is possible to take up the question of an author's style in a simple way. Familiarity with these terms makes it desirable to handle the study of *Julius Caesar* in a far more scholarly fashion than would be possible otherwise. In connection with the drama, it is wise to teach the general structure of Shakespeare's plays as the pupil is saved much bewilderment if he understands what is to be accomplished in each act. He is also furnished a basis for future reading and study, which makes it possible for him to do much better work. The outline below is given as a general one to follow, but it should be varied slightly if the play demands:

I. Introduction: Act I.
    A. Introduction of important characters.
    B. Previous history necessary for understanding of plot.
    C. Hero's purpose.
II. Development of hero's purpose: Act II.
III. Climax: Act III.
IV. Gradual undoing of opposition to heir: Act IV.
V. Catastrophe or happy ending: Act V.

The play should be studied carefully with questions as well as by following this outline. The reading hour should be given up to the discussion of these until the pupils are thoroughly familiar with the thought of the times. Then should follow a dramatization of the entire play. By no means have the pupils learn their parts. It is reading we are teaching, not public speaking. The important element is the drill they get in handling their book easily, in being able to look from it to the person addressed and back again without stumbling. In going through such simple acting as is in good taste with their part and their possibilities and still keeping their place in reading, these are the essentials which give the value to this work. Assign the parts the day before and give such directions about the position of the different characters as may seem best, including the acting necessary for the interpretation. The front of the schoolroom is the stage, the exits and entrances are from the side, the school is the audience. After the first act is read, plans for the stage can be asked for from the pupils. It will be a surprise to find how much interest and ingenuity the pupils will show in this work and what a growth will be made in imitation, in resourcefulness, and in expressional reading.



STAGE PLAN FOR DRAMATIZATION OF TIPPING JOHN SILVER THE BLACK SPOT.

A-B, Front wall of room or back of stage; C-D, Front of stage, bounded by front row of seats; 1, John Silver; 2, Jim; 3, Exit and entrance of Mutineers; X X X X, Mutineers; X, Mutineer that gave the black spot.

Suggestive Course of Reading for Grammar Grades.

SIXTH YEAR.

Fourth Reader.
Robinson Crusoe.
Hiawatha.
Rip Van Winkle.
King Arthur and His Knights.
Great Stone Face.
Courtship of Miles Standish.

SEVENTH YEAR.

Fifth Reader.
Lamb's *Tales from Shakespeare.*
Lowell's *Vision of Sir Launfal.*
Man Without a Country.
Treasure Island.

EIGHTH YEAR.

Fifth Reader.
Evangeline.
Lady of Lake.
Snowbound.
Julius Caesar.
Succession of Forest Trees (Thoreau).

Reading in the High School.

Reading as a special course in the high school does not exist, but the drill in it should by no means be discontinued because of that. The English courses offer abundance of opportunity for reading. If the grade work has been properly done the study of literature in the high school has received an impetus which the instructors recognize to be of the highest value. Not all of every classic, taken up in the study of English, can be read aloud by the class in the recitation period, but selections can and should be read with particular attention given to the expression of them. Dramatization, here as in the grades, is one of the best devices for bringing awkward pupils before the class and making them forget their embarrassment. Numerous passages in narrative poems and in prose fiction can be simply dramatized, and much benefit in thought interpretation can be derived from the work as well as the drill in reading. Some of these are *The Inn Scene,* in Silas Marner; *Tipping John Silver the Black Spot,* in Treasure Island; *Trial of Rebecca,* in Ivanhoe; *Quarrel between Roderick and Malcolm Graeme,* in Lady of the Lake.

Teacher's Reference Table of Terms Used in Reading.

- I. QUALITY.
  - A. Definition.
    - 1. Quality has reference to the kind of tone to be used.
  - B. Kinds.
    - 1. Pure.
      - a. A tone free from harsh, nasal, or aspirate qualities.
    - 2. Orotund.
      - a. Definition.
        - 1. Full, clear tone used in solemn, energetic, or pathetic expression.
      - b. Degrees of this tone according to emotion.
        - 1. Effusive.
          - a. Solemnity or pathos.
        - 2. Expulsive.
          - a. Earnestness.
        - 3. Explosive.
          - a. Intense excitement.
    - 3. Aspirated quality.
      - a. A tone made by an excessive expulsion of breath in uttering sounds of intense fear.
    - 4. Guttural quality.
      - a. This tone is caused by an imperfect opening of the mouth and nasal passages; it is never used except in imitation in interpretative reading.
- II. FORCE.
  - A. Definition.
    - 1. Force is that term in reading which designates the loudness and intensity of the utterance.
  - B. Kinds.
    - 1. Subdued.
      - a. Use.
        - 1. In expression of pathos and solemnity.
    - 2. Moderate.
      - a. Use.
        - 1. In expression of descriptive, or didactic composition.

- 3. Energetic.
    - a. Use.
        - 1. In all lively composition.
- 4. Impassioned.
    - a. Use.
        - 1. In expression of intense emotions.

III. STRESS.
- A. Definition.
    - 1. The manner in which force is applied.
- B. Kinds.
    - 1. Radical.
        - a. Force of the utterance falls on the first part of the sound and vanishes more or less rapidly.
    - 2. Medium.
        - a. Force is so applied that the utterance swells out in the middle of the tone.
    - 3. Vanishing.
        - a. Force is withheld until the close of the sound and then comes out sharply.
    - 4. Compound.
        - a. The voice touches forcibly on the first and last parts of the sounds, but passes lightly over the middle.
    - 5. Intermittent.
        - a. A trembling sound, or a number of short impulses resembling a wave.

IV. PITCH.
- A. Definition.
    - 1. The degree to which the voice is lowered or raised.
- B. Kinds.
    - 1. Low.
    - 2. Very low.
    - 3. Middle.
    - 4. High.
    - 5. Very high.
    - 6. Transitious.

V. TIME.
- A. Quantity.
    - 1. The length of time occupied in uttering a syllable or word.
- B. Movement.
    - 1. A term closely connected with quantity, but including in its meaning stops and pauses.

Reading in Literature.

Whence is thy learning? Hath thy toil
O'er books consumed the midnight oil?
—*Gay.*

All rests with those who read. A work or thought
Is what each makes it to himself, and may
Be full of great dark meanings, like the sea,
With shoals of life rushing.
—*Bailey.*

That place that does contain
My books, the best companions, is to me
A glorious court, where hourly I converse
With the old sages and philosophers;
And sometimes, for variety, I confer
With kings and emperors, and weigh their counsels.
—*Beaumont and Fletcher.*

ARITHMETIC

Introduction.

EVERY lesson in numbers should have value, not only as an arithmetic lesson, but as a language lesson. Each lesson should develop ideas and words with which to help express those ideas. Frequently we hear advanced students as well as school children say, "I know but cannot tell it." This proves the lack of power to express. Ideas should be clear and then definitely expressed.

The Abstract and Concrete.

Every class has its bright as well as its sluggish mentalities. In presenting numbers to children, the idea of the mental development of the mind should be paramount. The methods used to interest the extremely slow pupils may not be the most wholesome for the brighter minds. Care, therefore, should be taken that the object method is not carried to such an extent that it has a tendency to dwarf the brighter intellects.

The earlier the child can grasp the thought of abstract numbers, the better. In case the teacher realizes that the abstract has not aroused the understanding, then the objective method should be resorted to. It is better that the dullard be left dull than that the bright mind be stupefied or hindered in its growth. The slow pupil is not the teacher's only care and, perhaps, not the greatest.

The Child Mind.

No definite outline can be placed before any teacher that will be sufficient for all classes. Every class contains pupils with dispositions different from any other. No two faces were ever constructed exactly alike, and no two minds are exactly equal in power of concentration, or aptitude. That which arouses thought in one mind may fail to create a sensation in another. The child, therefore, is the teacher's problem. She should know her pupils fully as well as the subject to be taught.

Self-Effort is Paramount.

Children learn by doing is a pedagogical maxim, trite but true. The muscles of the body grow strong by usage. The same law governs mental growth. The child may learn a fact by hearing it stated. In this way he will get knowledge, but without some effort on the part of the learner the fact goes from him and no mental growth takes place. The mind becomes more powerful by its own activity. The awakening of self-effort in the pupil is true teaching.

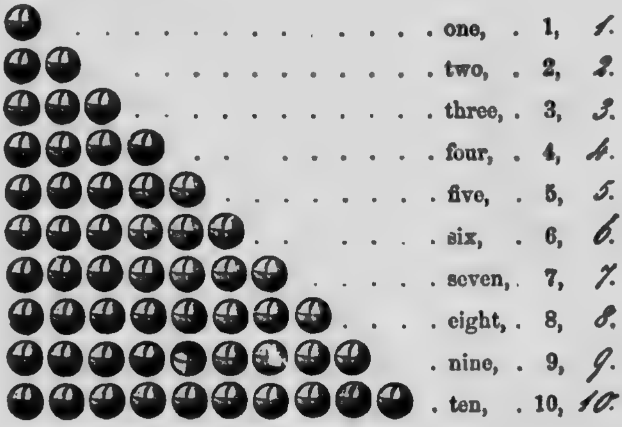
Practical experience on the part of the child arouses self-activity and understanding follows as a result. The boy or girl who spends a nickel out of his quarter realizes fully that he has 20 cents left. The children that play *keep store* with mock or real money acquire ability to understand fundamental operations and their practical applications. A pupil may say there are 9 square feet in a square yard without any mental conception of the size or shape of a square yard. When he has drawn the square yard and divided it into square feet, he appreciates the meaning of *9 square feet make 1 square yard.*

The Aim.

The object of teaching is not so much the placing of facts in the mind of the child as it is the preparing of the mind for the acquisition of knowledge, creating therein a taste for it, and developing the power to retain knowledge. Too much explaining on the part of the teacher weakens the mental capabilities of the child. Some problems must be explained by the teacher and this explanation should be followed by much drill, else the explanation is of little value. If the pupil studies out the problem for himself, very little drill is necessary.

Teaching of 1, 2, and 3.

Children, draw the picture of 1 apple.
    1 = one. Make 1. Write the word one.
Clap your hands 1 time.
Hold up 1 finger; 1 hand.
Make pictures of 2 apples.
Clap your hands 2 times.
    2 = two. Write the word two.
Hold up 2 fingers; 2 hands.
Draw 3 apples.
Clap your hands 3 times.
    3 = three. Write the word three.
Hold up 3 fingers.
Make 3 straight marks.
Write the word one 3 times.


one, . 1, *1.*
two, . 2, *2.*
three, . 3, *3.*
four, . 4, *4.*
five, . 5, *5.*
six, . 6, *6.*
seven, . 7, *7.*
eight, . 8, *8.*
nine, . 9, *9.*
ten, . 10, *10.*

TEACHING OBJECTS AND NUMBERS FROM 1 TO 10.

Make the figure one 3 times.
Make 3 circles. Make 3 squares.
Write the word two 3 times.
Make the figure 2 three times.
Touch the desk with the right hand 3 times.

Touch the desk with the left hand 3 times.

Touch the desk with both hands 3 times.

Make the figure 3 three times.

Mary may draw 2 apples and John may draw one apple.

How many apples have both drawn?

How many more did Mary draw than John?

Draw 3 circles around each apple.

Children, stand on the left foot. Touch the floor with the toe of the right foot 3 times. With the heel 3 times.

Stand on the right foot. Touch the floor with the toe of the left foot 3 times. With the heel 3 times.

Raise the right arm 3 times.

Raise the left arm 3 times.

Raise both arms 3 times.

Require pupils to tell something of their own experience, where 3 people or 3 objects were involved.

Some one tell a story of three robins.

Another tell of 3 children, another of 3 apples, and so continue the work until the pupils fully grasp the numerical value and can make applications of this value in their own language.

To Teach 4 and 5.

Children, draw a picture of 4 apples.

Draw 4 squares. Make 4 circles.

Make 4 straight lines.

4 = four. Write the word four. Count the letters in the word four.

Draw 4 pumpkins.

Tell a story of 4 kittens.

Mary, tell about having 4 apples and eating one. How many were left?

Tell about eating two apples.

Tell about eating three.

Children, draw a picture of 5 apples.

Make 5 squares; 5 circles.

Make 5 straight marks.

5 = five. Write the word five 5 times.

Can five children play *Pussy Wants a Corner?* Tell how it is done.

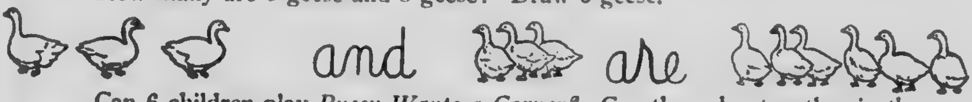
Tell a story about having 5 cents and spending 2 cents. About spending 1 cent. About spending 3 cents. About spending 4 cents. About spending 5 cents.

A Lesson to Illustrate 5, 6, and 7.

Draw 5 apples, 5 squares, 6 circles. Make 6 dots. Make 6 straight lines.

Make 5 long lines and 1 short one. How many more long lines have you than short ones?

How many are 3 geese and 3 geese? Draw 6 geese.

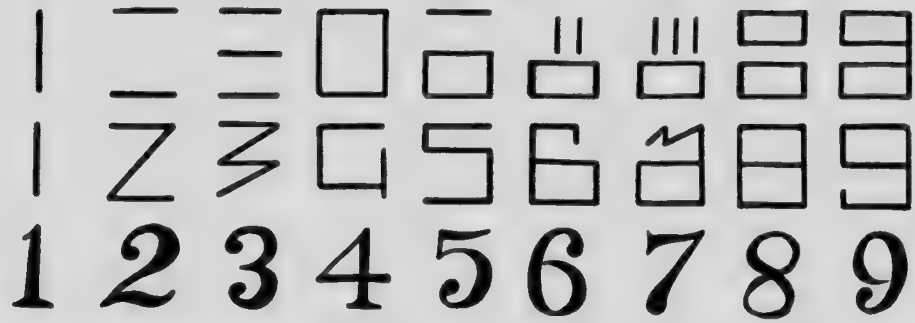


Can 6 children play *Pussy Wants a Corner?* Can they play together in the same room? Tell how.

Can 2 boys play with 6 marbles? Tell how.

If you had 6 cents and bought a two-cent stamp, how many cents would you have left?

Evolution of Figures



The Forty-five Combinations of Numbers

1 1	1 2	1 3	1 4	1 5	1 6	1 7	1 8	1 9
2 2	2 3	2 4	2 5	2 6	2 7	2 8	2 9	
3 3	3 4	3 5	3 6	3 7	3 8	3 9		
4 4	4 5	4 6	4 7	4 8	4 9			
5 5	5 6	5 7	5 8	5 9				
6 6	6 7	6 8	6 9					
7 7	7 8	7 9						
8 8	8 9							
9 9								

All combinations of addends producing any number from 4 to 18

10	11	12
5 5	5 6	6 6

8	9	10	11	12	13	14
4 4	4 5	4 6	4 7	5 7	6 7	7 7

6	7	8	9	10	11	12	13	14	15	16
3 3	3 4	3 5	3 6	3 7	3 8	4 8	5 8	6 8	7 8	8 8

4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2 2	2 3	2 4	2 5	2 6	2 7	2 8	2 9	3 9	4 9	5 9	6 9	7 9	8 9	9 9
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Can 6 boys play baseball? Tell why not.

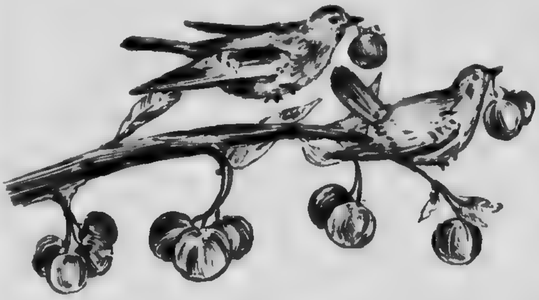
Draw a nest with 1 egg in it and one with 7 eggs in it. How many are 6 eggs and 1 egg?

If you take 1 egg out of each nest, how many eggs will there be in both nests? How many are 3 eggs and 4 eggs?

NOTE: These exercises can be continued with all numbers. All numerical values and combinations should be illustrated by stories related by the child and in the child's own language.

Review Object Lesson.

How many cherries on the end of the branch?
How many in the first cluster?
How many in the first cluster and on the end of the branch?
How many cherries in the second cluster?
How many in the first and second clusters?
How many in the first and second clusters and on the end of the branch?
How many more in the second cluster than in the first cluster?
How many more in the second cluster than on the end of the branch?
How many cherries in the third cluster?
How many in the third and second clusters?
How many in the third and first clusters?
How many in the third cluster and the end of the branch?
How many in the first, second and third clusters?
How many cherries on the branch?
How many more in the third cluster than in the second cluster?
How many more in the third cluster than in the first?
How many more in the third than on the end of branch?



Children, what kind of birds do you think these are? Why?

How many cherries has each bird taken? From what place on the branch do you think the bird with the two took them?

From what place do you think the other bird took [illegible] cherry? Why?

How many cherries have both birds?

Which bird has the more?
How many more has one bird than the other one?
Children, did you ever see birds taking cherries from a tree?
Did you ever know people to shoot birds for taking cherries?
What do you think should be done to keep the birds from taking cherries?

Dominoes.

Children enjoy play work with dominoes, as it combines business with pleasure, and they learn to think as they play. The real dominoes are too noisy for the average child to handle in school. Each pupil will enjoy making a set for himself from pasteboard or some heavy paper. It affords children pleasant and profitable busy work.

Combinations With Dominoes.

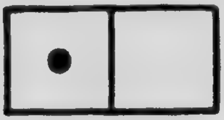
Point to the domino in the table which has no dots. The number of dots on this domino equals 0. 0 = *zero* or *naught*.

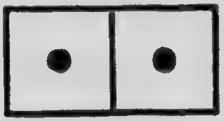
Zero means nothing.

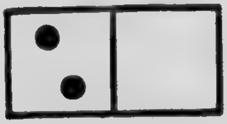
Draw the picture of this domino.

Call this double-blank.

Find the domino called blank-one. How many dots has it?







Find the domino called double-one.

Count the dots. 2 = two

Draw the picture of this domino.

How many more dots on double-one than on double-blank?

Find another domino containing the same number of dots as double-one.

Call it blank-two.

Draw the picture of blank-two.

The number of dots in blank-two is how many times the number of dots in double-two? How many dots in double-two and blank-two?

2 and 2 equal 4. 4 = four.

Find a double containing as many dots as both double-one and blank-two.

What should this be called? Ans.—Double-two.

Draw a picture of double-two.

Find another domino containing the same number of dots as double-two and having one side blank.

What shall this be called? Ans.—Blank-four.

Draw a picture of blank-four.

Find another domino containing the same number of dots as double-two and having one dot on one side.

What shall we call this domino? Ans.—Three-one.

Draw a picture of three-one.

How many dots on the left side of three-one?

How many dots on the right side of three-one?

How many more dots on the left side of three-one than on the right side?

Find a domino containing only one dot.

What shall we call this domino? Ans.—Blank-one.

Draw a picture of blank-one.

How many dots in double-blank and in blank-one? $1 + 0 = 1$.

How many more dots in blank-one than in double-blank? $1 - 0 = 1$.

How many dots in double-one and in blank-one? $2 + 1 = 3$.

How many more dots in double-one than in blank-one? $2 - 1 = 1$.

How many dots in double-two and blank-one? $4 + 1 = 5$.

How many more dots in double-two than in blank-one? $4 - 1 = 3$.

Find a domino containing three dots and one side blank.

What shall we call this domino? Ans.—Blank-three.

Draw a picture of blank-three.

Find another domino containing the same number ot dots as blank-three.

What shall we call this domino? Ans.—Two-one.

Draw a picture of two-one.

How many dots in blank three and in two-one? $3 + 3 = 6$.

How many more dots in blank-three than in two-one? $3 - 3 = 0$.

☞An endless number of combinations can be made with dominoes, only a few of which can be given here.

Fractions With Dominoes.

Place double-three on the table.
Find another double containing ⅔ as many dots as double-three.
Four equals what part of six?
Four is ⅔ of what number?
Find a double containing 1⅓ times as many dots as double-three.

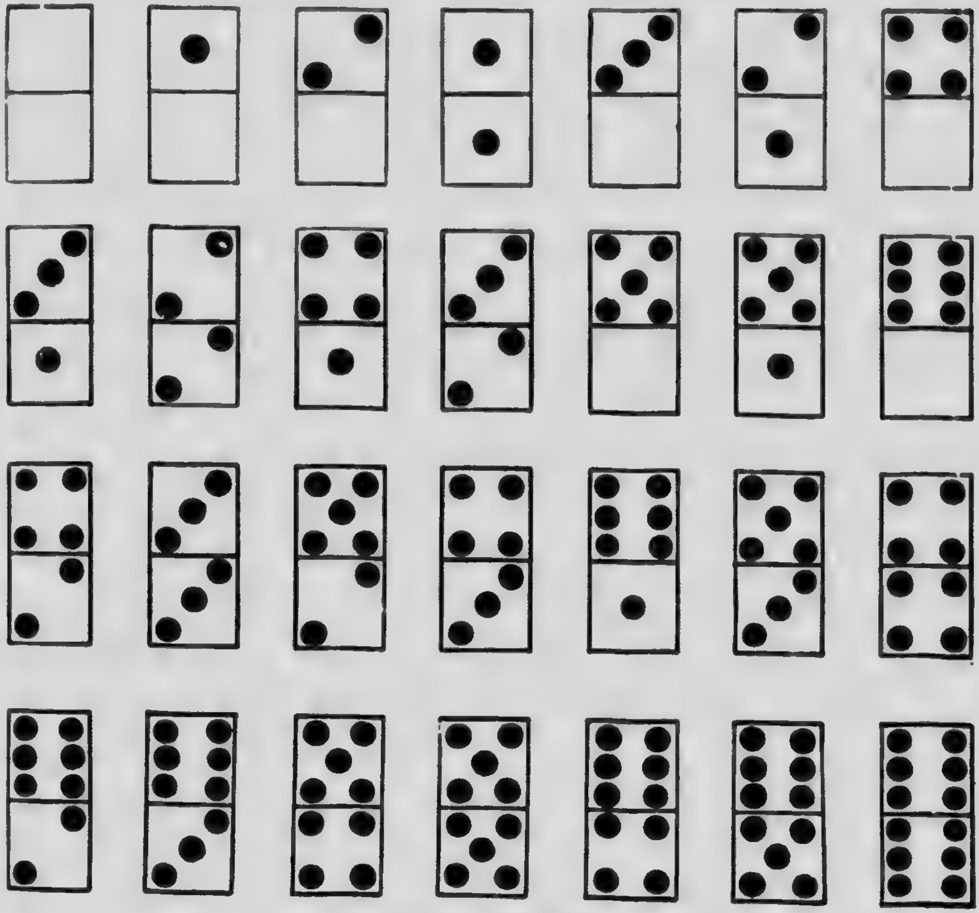


TABLE OF DOMINOES.

Six is what part of eight?
Six is ¾ of what number?
Eight is 1⅓ times what number?
Four is what part of eight?
Find a double containing 1¼ times as many dots as double-four.
Four is what part of five? Eight is what part of ten? Four is ⅘ of what number? Eight is ⅘ of what number?
Five is what part of four? Ten is what part of eight?
Five is 1¼ times what number?
Ten is 1¼ times what number? Ten is ⁵⁄₄ of what number?
Find a double containing 1¼ times as many dots as double-five.

Five is what part of six? Six is what part of five?

Ten is what part of twelve? Twelve is what part of ten?

Twelve is what part of eight? Eight is what part of twelve?

Six is what part of twelve? Twelve is how many times six?

Four is what part of twelve? Twelve is how many times four?

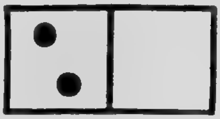
Find a domino not a double containing ⅔ as many dots as double-six.

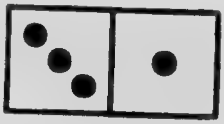
Find a domino not a double containing ⅓ as many dots as double-six; one, not a double, containing ½ as many as double-six; one, not a double, containing ¾ as many dots as double-six.

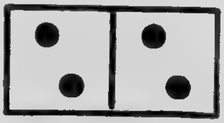
Find another with the same number of dots as five-four.

Percentage With Dominoes.

Find a domino which contains 50% as many dots as the other.

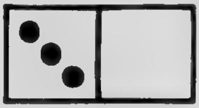


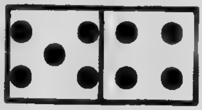


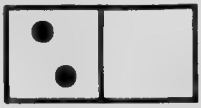


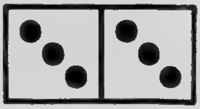
The number of dots on blank-two is what per cent. of the number on three-one and the number on double-two?

Find dominoes containing 33⅓% as many dots as another.









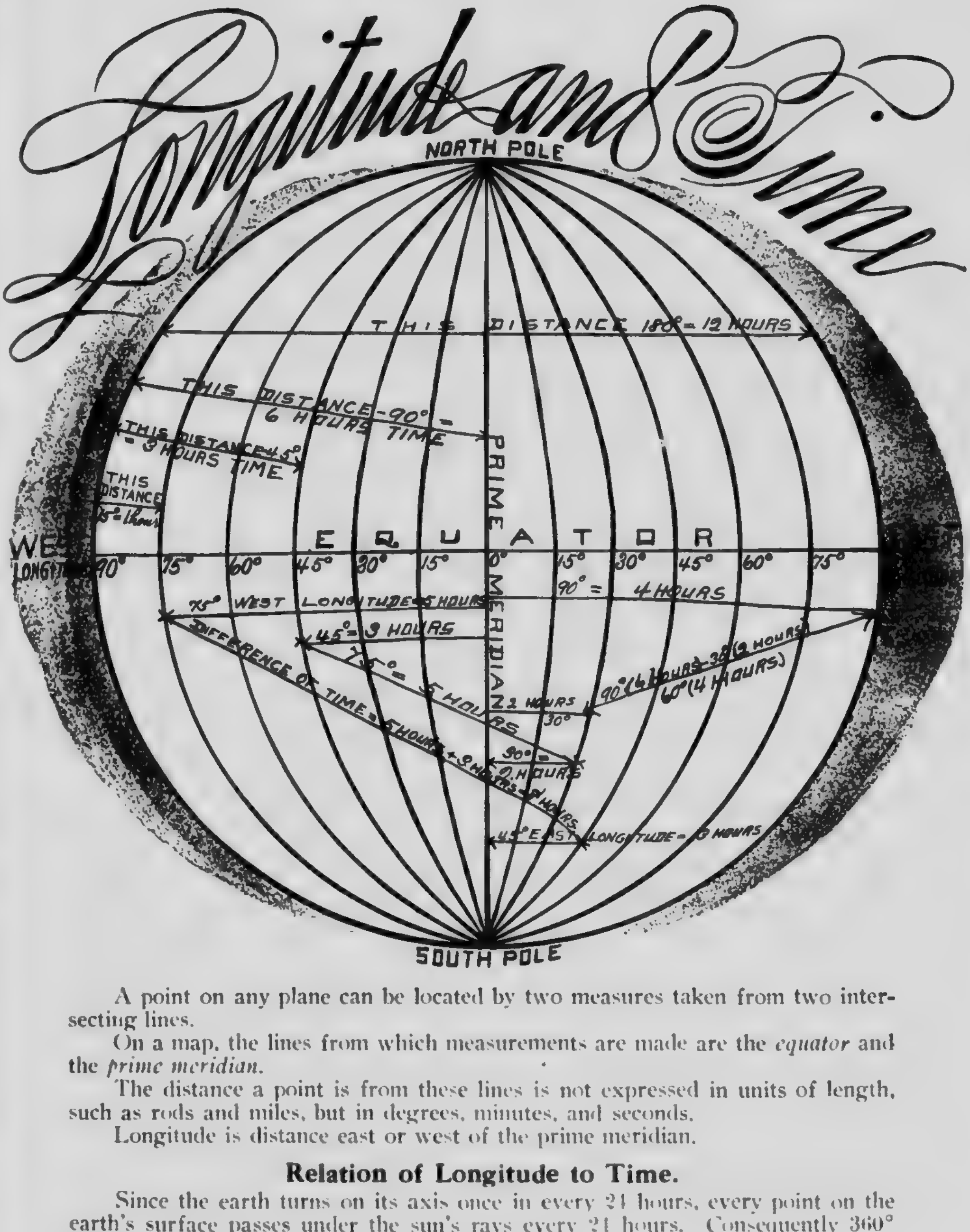
The number of dots on blank-two is what per cent. of the number on blank-three? On double-three?

This work may continue with all per cents. and with various combinations. Ratio and proportion may also be introduced to children by means of dominoes.

Applications of Percentage.

1. Without Time.
   1. Profit and Loss.
   2. Commission.
   3. Stocks, Dividends, etc.
   4. Premiums and Discounts.
   5. Brokerage.
   6. Stock Investments.
   7. Taxes.
   8. Duties and Customs.
2. With Time.
   1. Simple Interest.
   2. Partial Payments.
   3. True Discounts.
   4. Discounting and Banking.
   5. Exchange.
   6. Compound Interest.
   7. Annuities.
   8. Insurance.

1. *Price* is the sale value in money.
2. The *wholesale* price is the price of merchandise in large quantities.
3. The *retail* price is the price of merchandise in small quantities.
4. Merchandise is bought and sold at *wholesale* and at *retail* prices.
5. *Discount* is an allowance or deduction from the amount owing or charged.
6. The purchase and sale of merchandise are known as ***mercantile transactions.***


Longitude and Time
NORTH POLE
THIS DISTANCE 180° = 12 HOURS
THIS DISTANCE-90° = 6 HOURS TIME
THIS DISTANCE 45° = 3 HOURS TIME
THIS DISTANCE 15° = 1 hour
PRIME MERIDIAN
EQUATOR
WE
LONGIT
90°
75°
60°
45°
30°
15°
0°
15°
30°
45°
60°
75°
90° = 4 HOURS
75° WEST LONGITUDE = 5 HOURS
45° = 3 HOURS
75° = 5 HOURS
DIFFERENCE OF TIME = 5 HOURS + 3 HOURS = 8 HOURS
2 HOURS
30°
90° (6 HOURS) - 30° (2 HOURS)
60° (4 HOURS)
90° = 2 HOURS
45° EAST LONGITUDE = 3 HOURS
SOUTH POLE

A point on any plane can be located by two measures taken from two intersecting lines.

On a map, the lines from which measurements are made are the *equator* and the *prime meridian*.

The distance a point is from these lines is not expressed in units of length, such as rods and miles, but in degrees, minutes, and seconds.

Longitude is distance east or west of the prime meridian.

Relation of Longitude to Time.

Since the earth turns on its axis once in every 24 hours, every point on the earth's surface passes under the sun's rays every 24 hours. Consequently 360° of the earth's surface pass under the sun's rays in 24 hours. Therefore,

360° of longitude = 24 hours of time.
1° of longitude = 1/360th of 24 hrs. = 4 min.
1′ of longitude = 1/60th of 4 min. = 1/15th min. = 4 sec.
1″ of longitude = 1/60th of 4 sec. = 1/15th sec.

Consequently, the difference in longitude equals fifteen times the difference in time. The motion of the sun is only apparent.

When we are on the cars moving eastward, the objects on either side appear to be going west. We pass another train, which is standing still, and it appears to move in the opposite direction to the motion of the train on which we are riding.

The earth rotates on its axis from west to east. This motion of the earth causes the sun to appear to move from east to west.

EARLIER TIME WEST; LATER TIME EAST. Because 360° of the earth's surface pass under the sun's rays in 24 hours, the sun appears to pass over 15° of the earth in one hour. Consequently, when it is noon on any meridian, it will be one o'clock P. M. 15° east of that meridian and eleven o'clock A. M. 15° west of it.

Questions.

When it is noon in Chicago, what is the time 15° east of Chicago? 15° west of Chicago? 30° east of Chicago? 30° west of Chicago? 90° east of Chicago? 90° west of Chicago?

What direction would you go from here to find later time? To find earlier time? When it is noon here, in what direction and how many degrees from here is it 3 o'clock P. M.? 10 o'clock P. M.?

In traveling east does one's watch become too fast or too slow?

A man travels until his watch is one hour too fast; which way did he travel and how many degrees? After sunrise in Montreal darkness continues for more than two hours in Vancouver. Tell why.

BELONGS TO GEOGRAPHY. The subject of longitude and time properly belongs to geography and should be taught, or at least correlated, in geography lessons.

Most countries have their own prime meridian. The prime meridian for the United States passes through Washington. That of England passes through Greenwich. That of France passes through Paris.

In reckoning time in Canada and the United States, longitude is usually measured from the meridian of Greenwich.

Twelve and Growth From It.

Twelve things make a dozen.

How many of you ever counted a dozen eggs? 12 = twelve = a dozen.

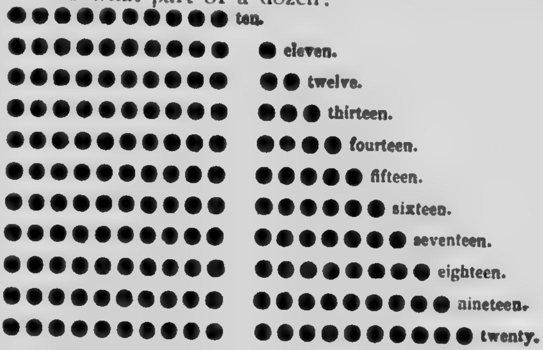
Make a dozen marks. Make a dozen circles. Make a dozen squares. Place a dozen pegs on your desk. Put the pegs in two piles, placing as many pegs in one pile as in the other pile. How many pegs in each pile? Each pile contains how many pegs? Each pile contains what part of a dozen?

6 = six = a half dozen.

How many eggs in a half dozen? Make a half dozen marks. Make a half dozen circles. Put a half dozen rings around a circle.

William is a dozen years old. He has a sister half as old. Tell a short story about the age of his sister.

William has a cent for every year he is old. How much money has he? Has he more or less than a dime? How much?



TEACHING OBJECTS AND NUMBERS FROM 10 TO 20

The sister has a cent for every year she is old. How many cents has she? Has she more or less than a nickel? How much?

Has she more or less than a dime? How much?

Has William more or less than a nickel? How much?

Has William more or less than two nickels? How much?

Has William more or less than three nickels? How much?

How many sticks of candy can the sister buy, if each stick is worth one cent?

If apples cost two cents each, how many apples can the sister buy?

If pears are three cents each, how many pears can the sister buy?

If candy is one cent a stick, how many sticks can William buy?

The number of sticks that the sister can buy, is what part of the number William can buy?

If apples cost two cents each, how many apples can William buy?

The number of apples William can buy is how many times the number the sister can buy?

Draw the number of apples the sister can buy.

Draw the number of apples William can buy.

The number of apples the sister can buy is what part of the number that William can buy? ½ = one-half.

If pears cost three cents apiece, how many pears can William buy? How many can the sister buy?

The number William can buy is how many times the number the sister can buy?

The number the sister can buy is what part of the number William can buy?

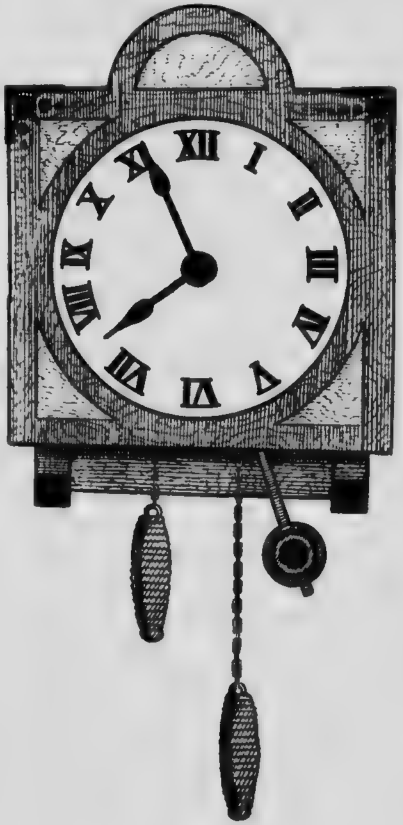
Draw the number of pears that the sister can buy.

Draw the number of pears William can buy.

Four are how many times two?

Two is what part of four? 2 = — of 4. 4 = — times 2.

Six are how many times three? Three is what part of six? 3 = — of 6. 6 = — times 3.



Teaching Regularity in Counting.

Does this clock tick? Why not? Listen to the clock on the wall. Does it tick? (Teacher indicating when to begin.) Count silently three ticks of the clock, raising the hand on count three. Count silently four ticks of the clock, raising the hand on four. Continue this exercise to ten counts, and repeat until the children get the idea of regularity in counting.

Touch fingers to desk at clock ticks. First touch with right hand, then with left hand, and then with both hands.

Touch fingers to desk, giving one touch to two ticks of the clock.

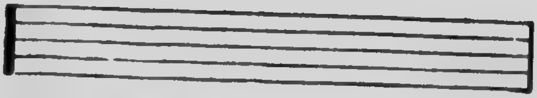
Touch fingers to desk, giving one touch to three ticks of the clock.

Touch fingers to desk, giving one touch to four ticks of the clock.

Repeat the exercise until mastered.

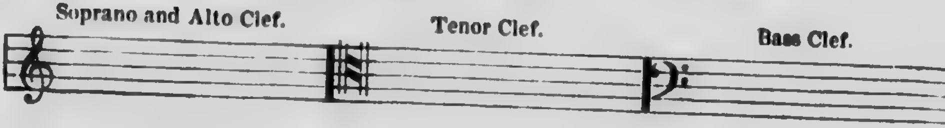
Touch the desk two times to one tick of the clock.

This is a Staff.

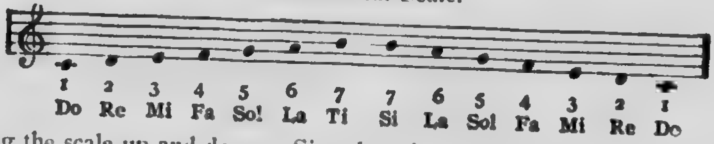


How many lines in a staff?
Between the lines are spaces.
How many spaces in the staff?
How many more lines than spaces does a staff contain?

The figures 𝄞 and 𝄢 are called *Clefs*.



The Musical Scale.



Sing the scale up and down. Sing do, mi, sol, do.

Whole note.	**Half note.**	**Quarter note.**	**Eighth note.**	**Sixteenth note.**
𝅝	𝅗𝅥	𝅘𝅥	𝅘𝅥𝅮	𝅘𝅥𝅯
Whole rest.	**Half rest.**	**Quarter rest.**	**Eighth rest.**	**Sixteenth rest.**
𝄻	𝄼	𝄽	𝄾	𝄿

How many quarter notes do you see? How many half notes? How many whole notes? How many notes in all?

How many quarter notes and half notes do you see? How many quarter notes and whole notes? How many half notes and whole notes?

Touch the quarter note as the clock ticks, giving one count to each tick. Touch the half note two times, giving one touch to each tick. Count one, two, three, four.

Touch the whole note four times, giving one touch to a tick. Count one, two, three, four (the counting should first be aloud, then silently).

Sing syllables, do, do, re, re, mi, mi, do, keeping time as indicated above.

Introduction of Square Measure.

Draw a two-inch square. Draw a one-inch square. How many one-inch squares make a two-inch square?

A one-inch square is what part of a two-inch square? A two-inch square is how many times a one-inch square?

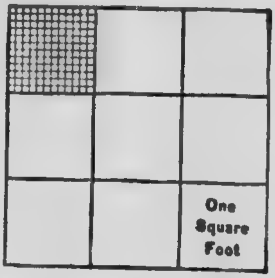
Cut both a one-inch and a two-inch square from paper. Cut the two-inch square into one-inch squares.

Find the distance around each square. The distance around the two-inch square is how many inches? The distance around the one-inch square is how many inches?

The distance around is called the *perimeter*. The perimeter of the two-inch square is how many inches more than the perimeter of the one-inch square?

This figure represents a square yard. It is 3 feet each way and contains 9 square feet. Each foot is 12 inches each way and contains 144 square inches.

From these facts it will be seen that the number of small squares in any large square is equal to the number of units in one side multiplied by itself.



Draw a three-inch square. Draw a two-inch square. Draw a one-inch square. Draw a half-inch square.

How many half-inch squares make a one-inch square? How many one-inch squares make a two-inch square? How many half-inch squares make a two-inch square?

How many one-inch squares make a three-inch square? How many half-inch squares make a three-inch square?

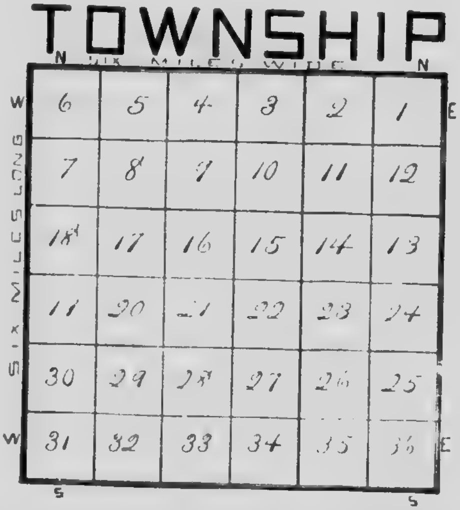
A one-inch square is how many times a half-inch square? A half-inch square is what part of a one-inch square?

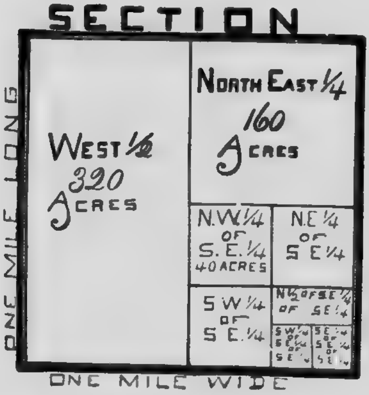
A two-inch square is how many times a half-inch square? A half-inch square is what part of a two-inch square?

A three-inch square is how many times a one-inch square? A one-inch square is what part of a three-inch square? A three-inch square is how many times a half-inch square? A half-inch square is what part of a three-inch square?

A three-inch square is how many times a two-inch square? A two-inch square is what part of a three-inch square?

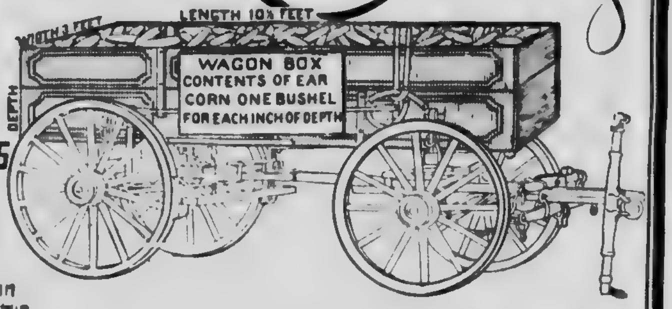
Cut paper to illustrate the solutions to the above problems.





A township of land, as surveyed by the governments of Canada and the United States, is six miles square. It is divided into 36 equal parts, called sections, each section measuring one mile square and containing 640 acres.

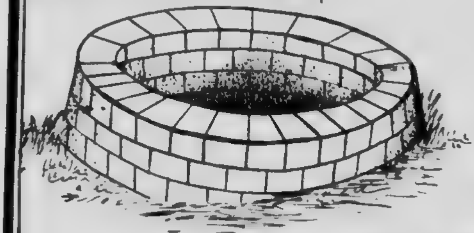
Practical Measurements



MEASURING CISTERNS

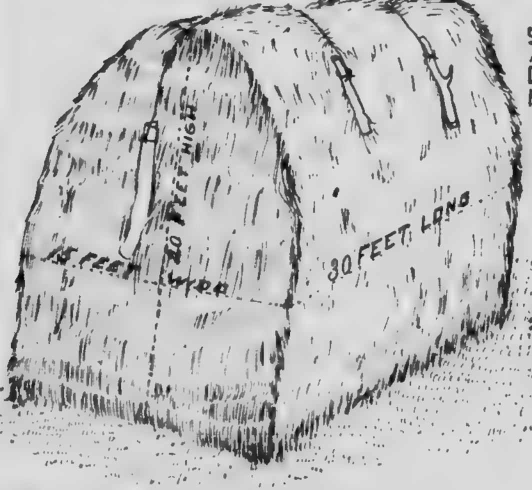
To find the contents of a cistern in barrels-multiply the square of the diameter in feet by the height in feet and divide the product by 4.

For example a cistern 8 feet in diameter and 9 feet deep will contain 8^2=64. 64X9=576÷4=144 barrels.



LOG MEASURE

SQUARE BOTH DIAMETERS IN INCHES AND TO THEIR SUM ADD THE PRODUCT OF THE DIAMETERS. MULTIPLY BY LENGTH IN FEET AND BY .01818



MEASURING HAY IN STACK

TO FIND THE NUMBER OF TONS IN A STACK MULTIPLY THE WIDTH BY THE LENGTH (IN FEET) BY ½ OF THE HEIGHT AND DIVIDE BY 500

FOR EXAMPLE THE ABOVE STACK WIILL CONTAIN 30X 15X 10 = 4500 ÷ 500 = 9 TONS.

MEASURING EAR CORN IN THE CRIB

MULTPPLY THE NUMBER OF CUBIC FEET OF CORN BY 6 AND STRIKE OFF THE RIGHT HAND FIGURE AND YOU HAVE THE NUMBER OF BUSHELS.

Sections 16 and 36 were reserved as school lands and in settled districts were either leased or sold. Money obtained from leasing or selling of such lands became appropriated for educational purposes. Where grants of land were made for internal improvement, as to aid in building railroads, the grants were usually confined to the odd-numbered sections adjacent to the lines of railways.

Transfers of titles in land are made by the section or some fractional portion of a section, as shown in the illustration.

How many acres are there in a half section? In a quarter section?

Compute the value of a half section at $82.50 per acre.

What is the value of the north half of the northeast quarter in section 20 at $63.75 per acre? At $91.40 per acre?

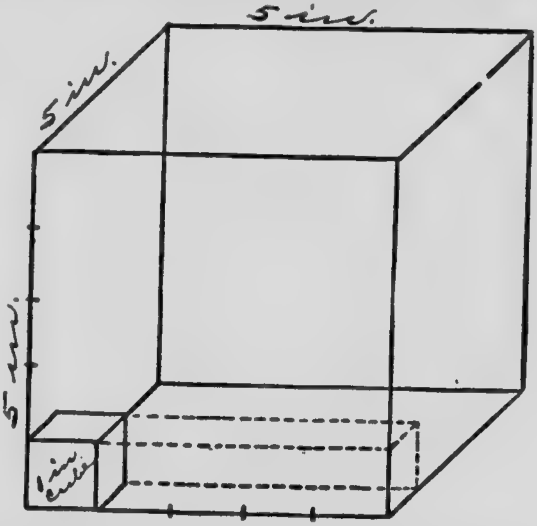
How many acres of land in ⅛ section? In three sections?

What is the difference in acreage between five sections and four sections?

Cubic Measure.

A cube is a solid figure in which all the edges, meeting in a corner, are at right angles to each other, and in which all the edges are equal. This will be seen in the illustration, which represents a cube whose edge is 5 inches. Its volume is found by taking for a unit of cubical measure a cube 1 inch on each edge. This unit, or cube, is laid along one edge as many times as possible, or 5 times, thus forming a row of 5 cubic inches. See the illustration and also page 369.

Five rows of 5 cubic inches may be formed at the bottom, giving a layer of 5 x 5 cubic inches. It requires 5 such layers to fill up the given cube, or 5 x 5 x 5 cubic inches. This use of the third power of the number of inches on the edge gives the name "cube" of a number to the third power of the number. Since no solid figure exists with four edges at right angles, this process of naming the powers ceases with the third, or cube.



The figure 7^3 indicates that 7 is to be raised to the third power; thus, 7 x 7 x 7 = 343.

The process of resolving a given number into three equal factors, or finding the length of one edge of a cube, is called *cube root*. A small figure combined with the radical sign ($\sqrt[3]{}$) indicates that the cube root is to be extracted. Thus, $\sqrt[3]{343} = 7$.

Find the cube root of 17,576.

Answer, 20 + 6 = 26.

PROCESS.

$$\begin{array}{rr|l}
 & & 17'576(\underline{20+6} \\
 & & 8,000 \\
\hline
3 \times 20^2 = & 1,200 & 9,576 \\
3 \times 20 \times 6 = & 360 & \\
6^2 = & 36 & \\
\hline
 & 1,596 & 9,57 \\
\end{array}$$

> The cube of any number composed of tens and units contains four parts:
> I. The cube of the tens.
> II. Three times the product of the square of the tens by the units.
> III. Three times the product of the tens by the square of the units.
> IV. The cube of the units.

If the cube of any number be separated into periods of three figures each, beginning at the right, there will be as many periods as there are figures in the root, but the left-hand period may contain one, two, or three figures.

Common Fractions.

James has one apple. He wishes his little sister to share this apple with him so the sister will have just as much as he will. Tell how he can do this. Illustrate by dividing an apple or other fruit.

HALF.

HALF.

How can two boys share an apple so one boy will have as much as the other? Draw a picture of the apple. Divide it as you would the apple.

What part of the apple is each piece? ½ = one-half.

How can three boys share a pie and each have as much as the others? Draw a picture of the pie. Divide it as you would divide the pie among three boys. Each piece is what part of the pie? ⅓ = one-third.

Tell other stories illustrating one-half and one-third of something. Pupils should be encouraged to make their own stories about one-third of and one-half of something.

Henry has a nickel with which to buy oranges. He is told that the oranges are 20 cents a dozen. How many can he buy with the money he has?

Roy has a dime. How many oranges can Roy buy? The number of oranges he buys is how many times the number Henry buys? The number Henry buys is what part of the number Roy buys? ½ = one-half.

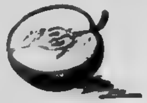
Henry's money is what part of Roy's money?

If oranges are 30 cents a dozen, how many can Henry buy? How many can Roy buy? The number Henry can buy is what part of the number Roy can buy?

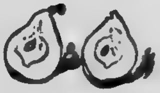
If oranges are 15 cents a dozen, how many can Henry buy? How many can Roy buy?

If oranges are 60 cents a dozen, how many can Henry buy? How many can Roy buy?

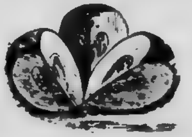
If oranges are 40 cents a dozen, how many can Roy buy? If oranges are ten cents a dozen, how many can each boy buy?



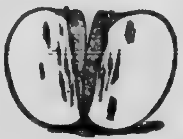
$= \frac{1}{2}$



$= \frac{2}{2}$



$= \frac{3}{3}$



$= \frac{2}{4}$

Make drawings like these.

Lessons to Illustrate ¼.

Three little girls came to see Mary. Her mother had made her a pie. Mary wished to cut her pie so each little girl and she might have equal parts of the pie. Tell how Mary would have to cut the pie.

Draw the picture of an apple and divide it as you think Mary divided her pie. What part of the pie would each child have? ¼ = one-fourth.

What are these the pictures of?

Are all the pieces equal?

What part of the whole is each piece?

Write a story suggested by the pictures.

Tell about each of the drawings.

Decimal Fractions.

Frank's father has a hundred-dollar bill. His mother has a ten-dollar bill. Frank has a one-dollar bill. His little brother, Donald, has a ten-cent piece, and his baby sister has a single cent.

Donald's money is how many times the baby sister's money? Frank's money is how many times Donald's money? The mother's money is how many times Frank's money? The father's money is how many times the mother's money?

Express in figures one hundred dollars, ten dollars, one dollar, ten cents, and one cent.

Ten cents equal one dime.

How much money have father, mother, and the three children? Write the number in both words and figures.

$100 + $10 + $1 + $.10 + $.01 = $111.11.

In the number 111.11 what does the left-hand 1 express? What does the right-hand 1 express? Tell what each figure expresses.

Which 1 stands for the greatest number of things? Which 1 stands for the least number of things? Each 1 is what part of the 1 at its left?

Tell what each 2 stands for in $222.22. Write about each 2 in this number.

Tell what each figure stands for in $333.33.

What does each figure name in 735.43?

Tell what each figure names in each of the following numbers:

742.83
645.01
741.81
227.31
200.02
607.04

75.87
30.26
20.18
30.05
20.07
90.06

6.45
9.63
8.00
6.66
4.01
2.02

4.4
8.3
9.1
7.6
5.2
1.5

One-tenth = .1. One-hundredth = .01.

Express in figures five hundred, three tens, two units, six tenths, five hundredths, two tens, two tenths, two hundredths, nine units, nine hundred, nine hundredths, four hundred, four hundredths.

Express in one number the following: Four hundred, five tens, three units, eight tenths, two hundredths.

A *Power* is the product of equal factors. 25 is the second power of 5. 4 is the second power of 2. 125 is the third power of 5.

What is the second power of 8, 6, 1, 4, 10? What is the third power of 3, 4, and 10?

A *Decimal Fraction*, or *Decimal*, is a fraction whose denominator is ten or some power of ten. A decimal is written at the right of a period (.) called the *Decimal Point*.

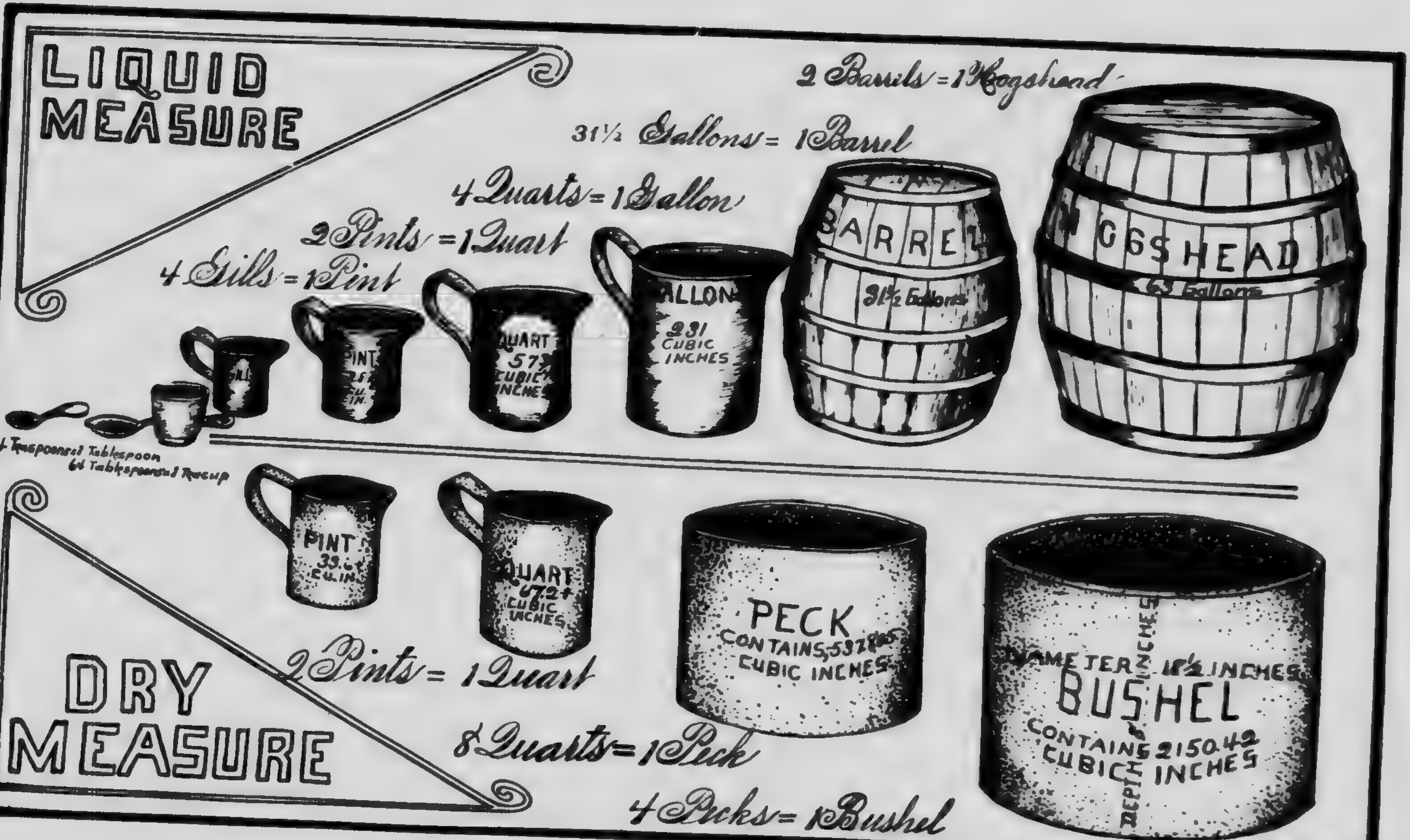
It is not necessary to write the denominator of a decimal. The denominator is shown by the position of the decimal point.

1/10 = .1   2/10 = .2   7/10 = .7   10/10 = 1.0
1/100 = .01   3/100 = .03   5/100 = .05   100/100 = 1.00
1/1000 = .001   42/1000 = .042   19/1000 = .019   1000/1000 = 1.000

Drill work for Division of Decimals.

5).005   50).005   .01).001   .001).01
3).006   .03).006   .02).0004   .02)4
300).03   300).3   .05).05   .05)50
.7)700   70).07   .07)700   .7).07

Long problems in division of decimals should be avoided until the student is sure of where to place the decimal point in the quotient.

LIQUID MEASURE
2 Barrels = 1 Hogshead
31½ Gallons = 1 Barrel
4 Quarts = 1 Gallon
2 Pints = 1 Quart
4 Gills = 1 Pint
4 Teaspoons=1 Tablespoon
64 Tablespoons=1 Teacup
PINT
QUART 57¾ CUBIC INCHES
GALLON 231 CUBIC INCHES
BARREL 31½ Gallons
HOGSHEAD 63 Gallons
DRY MEASURE
2 Pints = 1 Quart
8 Quarts = 1 Peck
4 Pecks = 1 Bushel
PINT 33.6+ CU. IN.
QUART 67.2+ CUBIC INCHES
PECK CONTAINS 537.605 CUBIC INCHES
DIAMETER 18½ INCHES
DEPTH 8 INCHES
BUSHEL CONTAINS 2150.42 CUBIC INCHES

Liquid Measure.

4 gills = 1 pint.
2 pints = 1 quart.
4 quarts = 1 gallon.
31½ gallons = 1 barrel.
2 barrels = 1 hogshead.
231 cubic inches = 1 gallon.

How many cubic inches in one quart? In one pint? In one gill?
How many gallons in one hogshead?

Four gills make one pint. Put a gill of water in a pint cup. Can you drink a gill of water? Put two gills in a pint cup.

What part of a pint is one gill? What part of a pint are two gills?

Can you drink two gills of lemonade? Edward drank four pints of lemonade on Arbor Day. How many gills did he drink? How many pints did he drink? If Edward drank four gills of lemonade every day, in how many days would he drink a gallon?

Peter drank a quart of lemonade on Labor Day. How many pints did he drink? How many gills did he drink? What part of a gallon did he drink?

Ned said, "I drank as many gills of lemonade on Labor Day as there are stripes in my flag." How many gills did he drink? How many pints did he drink? How many quarts? What part of a gallon did he drink?

Ralph said, "I drank as many gills of lemonade as there are white stripes in your flag." How many gills did Ralph drink? How many pints did Ralph drink? What part of a quart did Ralph drink? What part of a gallon did he drink?

If he drank six gills a day, in how many days will he drink a gallon of lemonade? In how many days will he drink a barrel of lemonade? In how many days will he drink a hogshead of lemonade?

How many cubic inches of lemonade did Ralph drink on Labor Day?

Tell the story of Edward, Peter, Ned and Ralph drinking lemonade on Arbor Day and Labor Day. Write the story.

Tell a story of your own experience about Labor Day. Tell if you drank lemonade. Tell how much you think you drank.

Dry Measure.

2 pints = 1 quart.
8 quarts = 1 peck.
4 pecks = 1 bushel.
2,150.42 cubic inches = 1 bushel of grain.
2688 cubic inches = 1 bushel of vegetables.
60 pounds = 1 bushel of wheat, beans, or potatoes.
32 pounds = 1 bushel of oats.
56 pounds = 1 bushel of rye, flaxseed, or shelled corn.
70 pounds = 1 bushel of corn on the cob.
52 pounds = 1 bushel of buckwheat.

A bushel of corn on the cob is sufficient to make a bushel of shelled corn.
Which is heavier, a bushel of wheat or a bushel of oats?
A bushel of wheat is how much heavier than a bushel of rye?
Which is heavier, two bushels of oats or one bushel of wheat?

Two bushels of oats weigh how much more than one bushel of shelled corn?

What will a bushel of beans cost at 5 cents a pound?

When a bushel of potatoes will sell for 50 cents, what is the value of 24 pounds of potatoes? What is the value of 30 pounds?

When wheat is 75 cents a bushel, what is the value of 300 pounds?

Lumber Measure.

To find the number of board feet in a piece of lumber:

Multiply the length in feet by the width in feet and the thickness in inches.

Any thickness less than an inch is computed the same as an inch.

BUILDING A BOARD FENCE.

How many feet of lumber in a board 18 ft. long, 1 ft. wide, and 1 in. thick?

How many feet of lumber in a board 18 ft. long, 8 in. wide, and 1 in. thick?

18′ x 12″ x 1″ = 18 ft. long, 12 in. wide, and 1 in. thick.

18′ x 8″ x 1″ = 18 ft. long, 8 in. wide, and 1 in. thick.

Tell the meaning of the following board measurements:

12′ x 6″ x 1″	12′ x 4″ x 1″	16′ x 9″ x 1″	14′ x 2″ x 4″
12′ x 6″ x 2″	12′ x 6″ x 1″	18′ x 6″ x 2″	12′ x 4″ x 4″

How many feet of lumber in each piece? Find the cost of all the pieces at $30 per M.

Interest.

Many methods of computing interest are recommended in school text-books. None of them excels the six per cent. method in simplicity and rapidity of computation.

Six Per Cent. Method.

Int. on $1 for one year at 6%................ = $.06.

Int. on $1 for one month at 6% = 1/12 of $.06 = .005.

Int. on $1 for one day at 6% = 1/30 of $.005 .. = .0001/6.

Rule I: Multiply the interest on $1 for the given time by the principal considered as an abstract number.

Rule II: Multiply the number of dollars by the number of days, divide the product by six, and point off three places.

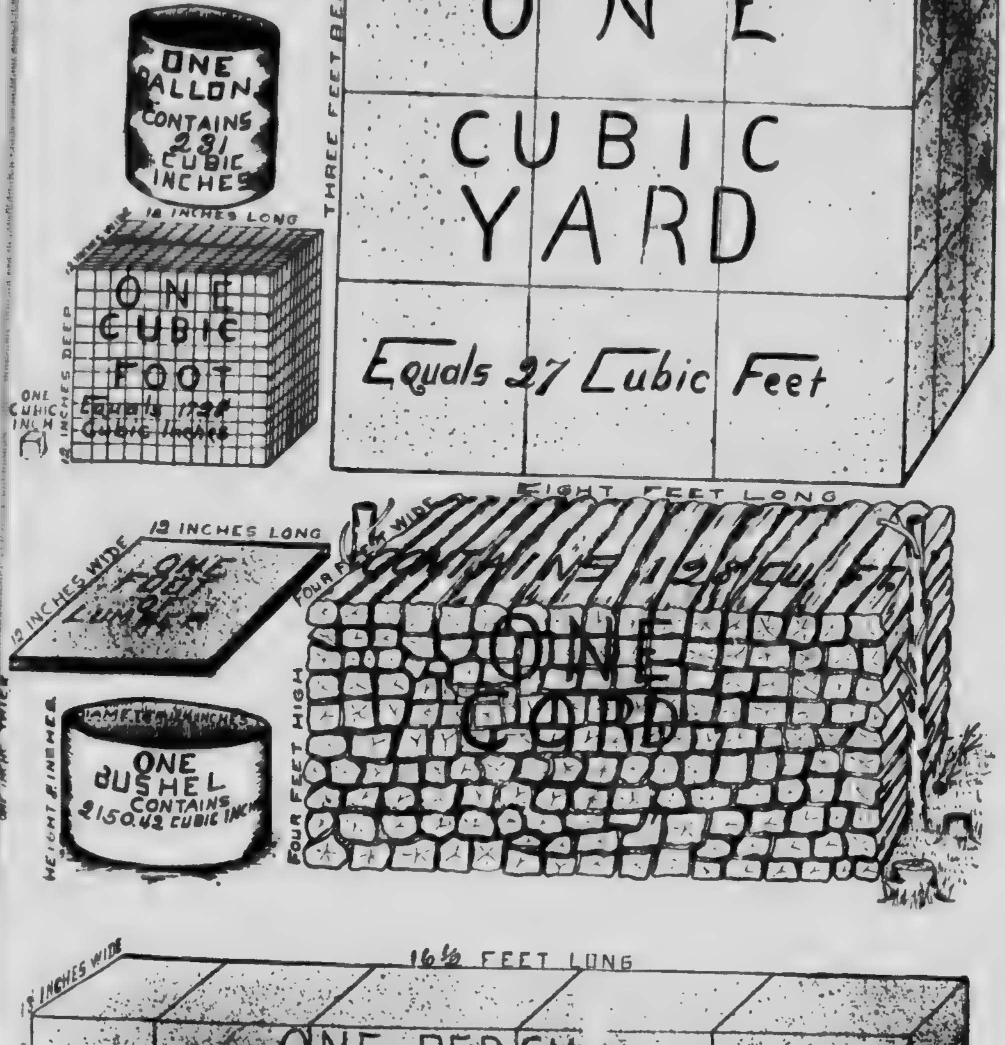
Drill Work in Interest.

$ 2	$ .50	$1,000	$80.00
200	2.50	1,200	80.50
300	4.50	1,500	90.00
400	5.50	3,000	98.50
500	10.50	2,000	75.00
250	20.50	1,250	75.50

Give the interest at 6% on each of the above number of dollars for the number of days given below.

1, 2, 3, 10, 12, 11, 15, 20, 25, 24, 30, 60, 45, 48, 75, 54, 42, 50.

Cubic Measure



When the Rate is Not 6%:

8% = 2% more than 6%.

2% = ⅓ of 6%. Therefore 8% is ⅓ more than 6%, or 4/3 of 6%.

When the interest is 8%, find the interest at 6%, and then take 4/3 of that amount.

When the rate is 7%, take 7/6 of the interest at 6%.

5% is what part of 6%? Tell how to find the interest at 5%. Make a prob lem using interest at 5%.

4% is what part of 6%? Tell how to find interest at 4%. Make a problem using interest at 4%.

4½% is what part of 6%? Tell how to find interest at 4½%.

Solve the Problems:

What sum of money at 8% interest for 6 months will equal $200? What sum of money at 4% for the same length of time will equal $200?

How many years at 6% interest will it take $500 to yield $75 in interest?

Advanced Work in Interest.

There are five quantities to be considered in interest, namely: principal, amount, interest, rate, and time. Any three of these being given, the other two may be found.

Fill the blank spaces in the following:

Principal.	Interest.	Amount.	Time.	Rate.
$ 500.00	....	....	1 yr., 6 mo.	6%
....	$ 40.00	....	1 yr.	5%
....	126.00	$726.00	3 yr., 6 mo.	...
3,960.36	....	....	9 mo., 20 da.	8%
1,250.00	218.75	....	....	5%
126.00	....	161.28	....	5%
260.00	39.52	....	3 yr., 2 mo., 12 da.	...
....	75.00	....	6 yr.	5%
....	....	758.40	7 yr., 3 mo.	4%
110.00	....	168.28	....	6%

Another method for computing interest in a rapid and simple manner is

The Thousand Day Method.

The interest on any principal in one thousand days at 36% will be exactly equal to that principal. Consequently problems in interest may be solved by th following rule:

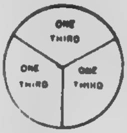
Rule—Multiply the principal by the time in days and point off three decimal places, and take such a part of their result as the given interest is of 36.

Percentage.

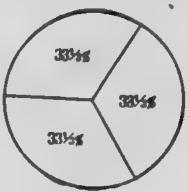
The subject of percentage may go hand in hand with common fractions. is as easy for a pupil to understand that 10 is 50 per cent. of 20 as it is for him master the thought that 10 is ½ of 20. The idea is that of ratio. When a pu comprehends that 18 is 3 times 6, he can be taught to understand that 18 is per cent. of 6, and since 6 is ⅓ of 18, he can know that 6 is 33⅓ per cent. of 1

Percentage is the name applied to computations in which the unit of measure is 100. Per cent. is an abbreviation of the Latin *per centum,* which signifies *by the hundred.* The character % means per cent. (See page 356).

100 per cent. of anything is all of it.
1 per cent. of anything is 1/100 of it.
5 per cent. of anything is 5/100 or 1/20 of it.
50 per cent. of anything is 50/100 or ½ of it.



CIRCLE.



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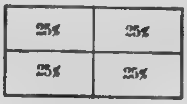
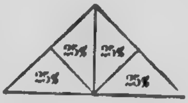
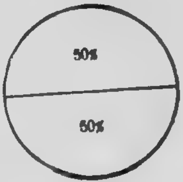


RECTANGLE.



TRIANGLE.



CIRCLE.

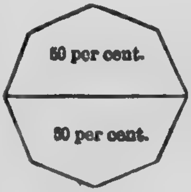
25 per cent. of anything is 25/100 or ¼ of it.
20 per cent. of anything is 20/100 or 1/5 of it.
33⅓ per cent. of anything is 33⅓/100 or ⅓ of it.
66⅔ per cent. of anything is 66⅔/100 or ⅔ of it.
10 per cent. of anything is 10/100 or 1/10 of it.
12½ per cent. of anything is 12½/100 or ⅛ of it.
16⅔ per cent. of anything is 16⅔/100 or ⅙ of it.
30 per cent. of anything is 30/100 or 3/10 of it.
75 per cent. = /100 or ——
80 per cent. = /100 or ——
40 per cent. = /100 or ——
60 per cent. = /100 or ——

What per cent. of a number equals 5/5 of it?
$10 is what per cent. of $10?
Two times a number, or quantity, is 200 per cent. of it.
Three times a number, or quantity, is 300 per cent. of it.

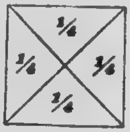
150 per cent. of a number is how many times the number? What is 150 per cent. of 50? What is 150 per cent. of $20? What is 150 per cent. of 30 apples?

250 per cent. of a number is how many times the number?

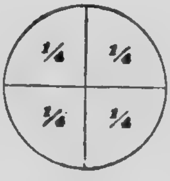
2 per cent. = 2% = 2/100 = .02 = 1/50.



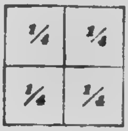
OCTAGON.



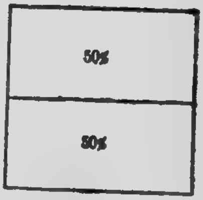
SQUARE.



CIRCLE.



SQUARE.



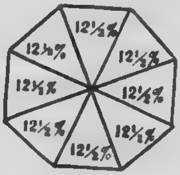
SQUARE.

4 per cent. = 4% = 4/100 = .04 = 1/25.
5 per cent. = 5% = 5/100 = .05 = 1/20.
6 per cent. = 6% = 6/100 = .06 = 3/50.
8 per cent. = 8% = 8/100 = .08 = 2/25.
10 per cent. = 10% = 10/100 = .10 = 1/10.
11 1/9 per cent. = 11 1/9% = 11 1/9/100 = .11 1/9 = 1/9.
12½ per cent. = 12½% = 12½/100 = .12½ = ⅛.
14 2/7 per cent. = 14 2/7% = 14 2/7/100 = .14 2/7 = 1/7.
16⅔ per cent. = 16⅔% = 16⅔/100 = .16⅔ = ⅙.

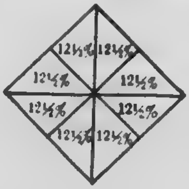
20 per cent. = 20% = 20/100 = .20 = ⅕.
25 per cent. = 25% = 25/100 = .25 = ¼.
33⅓ per cent. = 33⅓% = 33⅓/100 = .33⅓ = ⅓.
50 per cent. = 50% = 50/100 = .50 = ½.
66⅔ per cent. = 66⅔% = 66⅔/100 = .66⅔ = ⅔.
75 per cent. = 75% = 75/100 = .75 = ¾.

Study of 12½% and 10%.

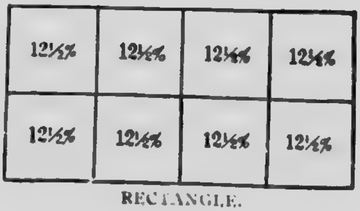
A figure having eight straight sides is an octagon.



OCTAGON.



SQUARE.



RECTANGLE.

What part of an octagon is 12½% of it?
What part of a rectangle is 12½% of it?
Draw a rectangle and show how to get 12½% of it.
What part of a square is 12½% of it?
Draw a square and show how to get 12½% of it.

A man had 72 eggs in a basket. How many dozen had he?

He sold 50% of his eggs to the grocer. How many eggs did he sell to the grocer? How many dozen did he sell to the grocer?

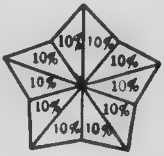
If he received 20 cents a dozen for his eggs, how much money did the grocer pay him? The grocer gave him a one-dollar bill in payment. What change should the man give the grocer?

Name three pieces of money that would be equivalent in value to this amount. Name four pieces that would be equivalent. Name four others.

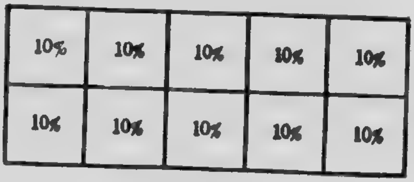
What five pieces of money would be equivalent to the change the man gave the grocer? What seven pieces would be equivalent to this amount? What eight pieces would be equivalent to this amount?

Relate the story of the man selling eggs to the grocer, telling the different ways the man could make the change when the grocer gave him one dollar for the eggs.

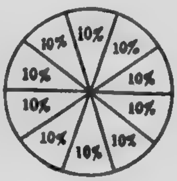
A figure bounded by ten straight sides is called a decagon. 10% of a decagon is what part of the decagon?



DECAGON.



RECTANGLE.



CIRCLE.

What part of a rectangle is 10% of it? Draw a rectangle and show how to find 10% of it.

10% of a circle is what part of it? What per cent. of a circle is 1/10 of it? Ten cents are 10% of how much money?

How many minutes is 10% of an hour?

Five cents are 10% of how much money?

Ten cents are 12½% of how much money? Five cents are 12½% of how much money?

100% of ten cents is how many cents? How many cents in 100% of five cents?

10 cents are what per cent. of 10 cents? Five cents are what per cent. of ten cents? 5 cents are what per cent. of 20 cents?

Two times anything is 200% of it. What is 200% of five cents? Ten cents are what per cent. of five cents? What is 200% of ten cents?

What is meant by 250% of anything? 25 cents is what per cent. of ten cents? What would be 250% of a dollar? One dollar is 250% of how much money?

How many per cent. make a whole square? How many per cent. make a dollar?

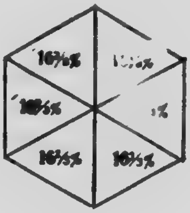
What is 100% of ten books? What is 100% of three watermelons?

An acre of land that cost $40 was sold at a gain of 100%. At what price was it sold?

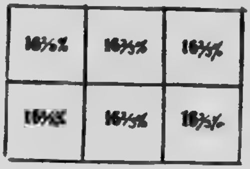
What per cent. of anything is 1/100 of it? What per cent. of a square is 1/100 of it? What per cent. of anything is 2/100, 3/100, 7/100, 9/100, 11/100?

What is 1% of $1? What is 8% of $1? What is 15% of $1? What is 12½% of $1? What is 12½% of $2? What is 16⅔% of $3?

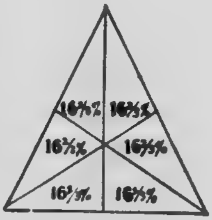
Study of 16⅔%.



HEXAGON.



RECTANGLE.



TRIANGLE.

What part of a hexagon is 16⅔% of it? 16⅔% of a hexagon is what part of 33⅓% of the same hexagon? 16⅔% of a hexagon is what per cent. of 33⅓% of the same hexagon?

16⅔% of a hexagon is what part of 50% of the same hexagon? 16⅔% of a hexagon is what per cent. of 50% of the same hexagon?

⅙ = what part of ⅓? ⅙ = what per cent. of ⅓? ⅙ = what part of ½? ⅙ = what per cent. of ½?

33⅓% of a hexagon is what part of 50% of the same hexagon? 33⅓% of a hexagon is what per cent. of the same hexagon?

⅓ = what part of ½? ⅓ = what per cent. of ½?

16⅔% of a rectangle is what part of a rectangle? Draw a rectangle and show how to get 16⅔% of it. 16⅔% of a rectangle is what part of 50% of a rectangle of the same size? 16⅔% of a rectangle is what per cent. of 50% of a rectangle of the same size?

⅙ = what part of ½? ⅙ = what per cent. of ½?

16⅔% of a triangle is what part of a triangle?

50% of a triangle is what part of it? 16⅔% of a triangle is what part of 50% of a triangle of the same size? 16⅔% of a triangle is what per cent. of a triangle of the same size?

How many minutes in 16⅔% of an hour? How many inches in 16⅔% of a foot?

16⅔% of a yard = —— in.

16⅔% of a yard = —— in.

MARY'S VACATION.

Mary went to the country to spend her vacation. She visited a woodland beautified by wild flowers. She picked four dozen roses. How many did she pick? She made a bouquet of 50% of them. How many roses in the bouquet? She sent 25% of her roses to her mother. How many roses did she send to her mother? 16⅔% of them she gave to a crippled girl who was not able to pick roses. How many roses did she give to the crippled girl?

The rest of the roses she put in a vase in her room. How many roses in her vase? The number of roses in her vase is what part of the number she gave the crippled girl? What per cent. are they?

The number of roses in her vase is what part of the number she sent her mother? What per cent. are they of the number she sent her mother?

The number in her vase is what part of the number in the bouquet? What per cent. of the number in the bouquet?

The number she sent her mother is what part of the number in the bouquet? What per cent. is it?

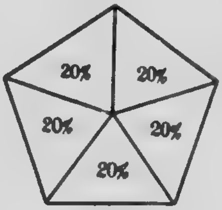
The number she gave the crippled girl is what part of the number in the bouquet? What per cent. is it?

The number she gave the crippled girl is what part of the number she sent her mother? What per cent. is it?

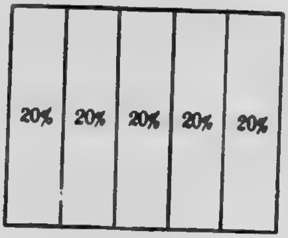
Tell the story of Mary and her roses. Write the story.

Write an original story about gathering flowers, using correctly 16⅔%, 50%, 25%, and 33⅓%.

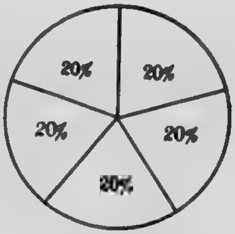
A pentagon is a figure bounded by five straight lines.



PENTAGON.



RECTANGLE.



CIRCLE.

What part of a pentagon is 20% of it?

What part of a circle is 20% of it?

20% of a rectangle is what part of the rectangle? Draw a rectangle and show how to get 20% of it.

⅕ of a circle is what per cent. of the circle?

20% of ten cents = —— cents. What is 20% of 25 cents? What is 20% of 50 cents? What is 20% of 10 cents? What is 20% of 10 marbles?

A merchant bought oranges for 20 cents a dozen and sold them for 20% more than he paid. What did he sell the oranges for per dozen? What would be the price of half a dozen?

STORY OF WALTER AND THE CHERRIES.

CHERRY TREE.

Walter's father was dead. His mother worked hard to provide her son with food, clothes, books, and other necessities of life.

One bright morning in June, Walter ran to his mother exclaiming, "Mother, I am going to help you. I am going to earn some money. Mr. Brown offers me two cents a quart for picking cherries."

It was Monday morning and Walter with a happy face and a glad heart seized a basket and started for Mr. Brown's cherry orchard.

Five saucy birds sat in the tree. One flew away. What per cent. of the birds flew away?

Walter had never picked berries before and he thought it would be great sport. He climbed upon a stepladder and reached for a branch upon which were clusters of red cherries. Into the basket he began to drop the fruit.

Gazing into his basket, he saw them and saw he had picked ten. How delicious they looked! Then the boy said to himself, "I'll eat just 20% of those ten cherries." How many cherries did he eat?

Walter worked until he was tired. Mr. Brown measured the fruit Walter had picked and found he had picked a bushel. "How many quarts will that be?" said Mr. Brown. Walter answered him correctly. What did Walter say? At two cents a quart, how much money did Walter earn on Monday?

Mr. Brown had picked 50% more than Walter. How many quarts of cherries had Mr. Brown picked?

Tuesday Walter picked 25% more than he did Monday. How many did he pick Tuesday? How much money did he earn on Tuesday?

Wednesday he picked 20% more than he did on Tuesday. How many quarts did he pick on Wednesday? How much money did he earn on Wednesday?

Thursday he picked only 50% as many as he did on Wednesday. How many quarts did he pick on Thursday? How much money did he earn on Thursday?

Friday he picked 16⅔% more than he picked on Thursday. How many quarts did he pick on Friday?

Saturday he picked 33⅓% less than he picked on Wednesday. How many quarts did he pick Saturday? How much money did he earn on Saturday?

On what two days did he pick the same number of quarts? How many quarts did he pick during the week? How many bushels? How many pecks?

How much money did he earn during the week? Did he earn more or less than $5.00? How much?

How many more quarts would it have been necessary for him to have picked enough to have earned $5.00?

What is 20% of $5.00? On Wednesday, did he earn more or less than 20% of $5.00? How many more quarts would he have needed to pick on Wednesday in order to have earned 20% of $5.00?

Tell the story of Walter picking cherries. Write the story. Do you think Walter was happy? Why? Make a similar story of your own construction.

Vertical and Horizontal Lines.

Draw a line straight up and down. Such a line is called a *vertical line.*

Draw a line straight right and left. Such a line is called a *horizontal line.* Draw a short vertical line crossing a horizontal line of the same length. + This is the ***plus sign*** and means more or add.

FILL BLANKS.

2 + 4 = —— 3 + 3 = —— 4 + 3 = —— 4 + 4 = ——

Tell how a plus sign is made. Tell about each of the above operations.

Draw two vertical lines. Draw two times as many horizontal lines. Draw eight lines, half of them vertical and the other half horizontal. What is ½ of eight? 8 = —— times 4.

Draw ten lines, half of them vertical and the other half horizontal. ½ of 10 = —— 10 = 2 times ——

Twelve is one dozen.

Draw a dozen lines, half of them vertical and the other half horizontal.

½ of 12 = —— —— is one-half a dozen.

A short horizontal line — means *minus* or take away. 4 — 2 = ——

5 — 2 = —— 6 — 2 = —— 7 — 2 = —— 7 — 3 = —— 8 — 5 = ——

6 — 4 = ——

Tell a short story about each of the operations above. Put the stories in writing.

AN ARITHMETICAL STORY.

Mother makes fudge for the children. She molds it in two pans. One pan is an inch deep and the other one is half an inch deep.

Each pan is full. Next mother cuts the fudge into cubes, making each as wide and long as the pan is deep.

MOTHER MAKING FUDGE.

Johnnie, from which pan do you want your cube of fudge? Why?
Each child shall have a cube from each pan. What is the size of each cube?
How many of the small cubes will make one of the large ones?
The large cube is how many times the small one?
The small cube is what part of the large one?
A one-inch cube is how many times a half-inch cube?
A half-inch cube is what part of a one-inch cube?
How long, how wide, and how thick is a two-inch cube?
How many one-inch cubes will make a two-inch cube?
A one-inch cube is what part of a two-inch cube?
How many cubic inches in a two-inch cube? Prove by cutting a two-inch cube from a potato or turnip.

How long, how wide, and how thick is a three-inch cube?

How many one-inch cubes in a three-inch cube?

A three-inch cube is how many times a one-inch cube?

A one-inch cube is what part of a three-inch cube? Prove your answer by an actual demonstration.

FRED GOES FISHING.

One morning Fred rose ten minutes before six. He spent 15 minutes dressing, five minutes washing and combing, and ten minutes eating his breakfast.

What was the time when he finished his breakfast?

After breakfast he spent fifteen minutes fixing his pole and line, after which he spent 30 minutes digging bait.

He then started for the lake. What was the time when he started?

What was the time when he began to dig bait?

What was the time when he finished dressing?

How much time did he spend in dressing, washing and combing, eating, preparing his pole and line, and digging his bait? The number of minutes spent in digging bait were how many times the number of minutes spent in dressing? The time spent in eating was what part of the time used in fixing his pole and line?

Pupils may write similar stories about going picnicking or some other pleasure or excursion.

Review Lessons in Percentage.

Lesson I. (See page 356).

An octagon is a figure with eight sides.

What part of an octagon is 50% of it?

What part of a square is 50% of it? Draw a square and show how to get 50% of it.

What part of a square is 25% of it? Draw a square and show how to get 25% of it.

Draw another square and show another way of getting 25% of it.

What part of a circle is 50% of it? Draw a circle and show how to get 50% of it.

25% of a circle is what part of it? Draw a circle and show how to get 25% of it.

A triangle is a plane figure bounded by three straight lines.

50% of a triangle is what part of it? Draw a triangle and show how to get 50% of it.

25% of a triangle is what part of it? Draw a triangle and show how to get 25% of it.

50% of a rectangle is what part of it? Draw three rectangles and show three different ways of getting 50% of a rectangle.

Lesson II.

What part of a rectangle is 25% of it? Draw a rectangle and show how to get 25% of it.

A boy having ten cents spends 50% of it. How much money does he spend? How much money has he left?

A boy having 50 cents spends 50% of it. How much money does he spend? How much has he left?

Make many stories about 50% of things. Cut an apple to show 50% of it. Make a drawing to show 50% of an apple.

How many minutes in an hour? How many minutes in 50% of an hour? How many minutes in 25% of an hour?

How many hours in 50% of a day? How many hours in 25% of a day?

How many things in a dozen? How many in 50% of a dozen? How many in 25% of a dozen?

How many pecks in a bushel? How many in 50% of a bushel? How many in 25% of a bushel?

How many quarts in a peck? How many in 50% of a peck? How many in 25% of a peck?

How many ounces in a pound of sugar? How many ounces in 100% of a pound of sugar? How many in 50% of a pound of sugar? How many in 25% of a pound of sugar?

A bushel of oats contains 32 pounds. How many pounds in 50% of a bushel of oats? How many pounds in 25% of a bushel of oats?

There are 12 inches in a foot. How many inches in 50% of a foot? How many inches in 25% of a foot?

There are ten cents in a dime. How many cents in 50% of a dime? A nickel is what per cent. of a dime? Ten cents is what per cent. of a dime?

LESSON III.

Ten cents is what per cent. of 20 cents? What is 50% of 20 cents? Ten cents is 50% of how many cents? Ten cents is what per cent. of 40 cents? What is 25% of 40 cents? Ten cents is 25% of how many cents?

In a class of 18 pupils 50% are absent. How many are absent? How many are present? In a class of 20 pupils 25% are absent. How many present? In a class of 20 pupils 25% are absent. How many are absent? How many are present? The number of pupils absent is what part of the number present? The number of pupils absent is what part of the number that equals this difference? What per cent. is it?

A boy bought a knife for 20 cents and sold it for 50% more than he paid for it. What did he get for this knife?

Henry had 24 marbles. He lost 25% of them. How many marbles did he lose? How many had he left? The number he lost is what part of the number he had left? The number he had left is how many times the number he lost?

William had 16 marbles and lost 100% of them. How many did he lose? He found 50% of what he lost. How many did he find? He then sold 50% of what he found. How many did he sell? How many had he left? He gave away 25% of what he then had. How many marbles did he give away? He put the rest in his pocket. How many marbles in his pocket?

Tell the story of William and his marbles. Write the story.

Make another story about some boy and his marbles, using 50% and 25% correctly in the story.

LESSON IV.

33⅓% of anything is ⅓ of it.

33⅓% of a circle is what part of the circle?

A figure having six sides is a hexagon. What part of a hexagon is 33⅓% of it?

Oliver caught nine fish. 33⅓% of them were too small to put on the string and he threw them into the water. How many fish did he throw into the water? How many fish did he take home? The number he threw into the water is what part of the number he took home? The number he threw back is what per cent. of the number he took home?

Bert caught 12 fish. He threw back 33⅓% of them and put the rest on his chain. How many were left to put on his chain? He gave a sick man 50% of those on his chain. How many fish did he give the sick man? How many fish had he left after his donation to the sick man? These he took home. Bert ate 50% of them for his dinner. His mother ate 25% of them and his father ate the rest. How many fish did Bert eat? How many did his mother eat? How many did his father eat?

The number the mother ate is what part of the number Bert ate? The number the father ate is what per cent. of the number Bert ate? The number the mother ate is what per cent. of the number the father ate? The number the mother ate is what per cent. of the number he took home?

Tell the story of Bert and his fish. Write the story.

What part of a rectangle is 75% of it? 25% of a rectangle is what part of 75% of the same rectangle?

How many cents in ¾ of a dollar? 75 cents is what part of a dollar? What per cent. is it?

LESSON V.

What part of a rectangle is 33⅓% of it? What part of a rectangle is 66⅔% of it? 33⅓% of a rectangle is what part of 66⅔% of the same? Make the drawing of a rectangle showing how to get 66⅔% of it.

⅓ of a rectangle is what part of ⅔ of the same rectangle? ⅓ of a rectangle is what per cent. of ⅔ of the same rectangle?

While combinations in addition should precede subtraction, the two processes should go hand in hand as early as possible in the education of the child.

Children love to work with their hands and the wise teacher or mother keeps the hands of the little ones busy, as the time is passing that prepares the mind for the grasping of abstract number work.

FOR EXAMPLE. Children draw two circles. (The children being previously instructed to bring some circular object with which to draw the circle in case they are not able to make a circle by using a string.) Divide the circle into four equal parts. Draw a small circle in each part of the large circle.

How many large circles are there? How many small circles are there? How many circles in all? How many more small circles than larger ones?

Have the child write the figure that represents each number he uses.

LESSON VI.

Continue the exercise, having the children draw three large circles, dividing each into four equal parts and placing a small circle in each part. This exercise gives the child work to do with both his hand and his brain. He learns also to count as well and compare objects.

The child will gladly furnish himself with corks or other materials with which to draw circles. Use the square in the same way, as well as in other ways.

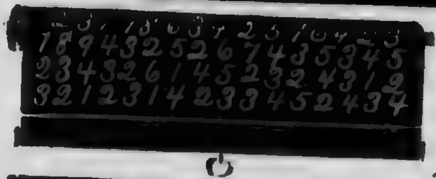
How many circles in the first and second squares? How many circles in the first, second, and third squares? How many in the fourth square? How many more circles in the first than in the third? How many in both the first and the third? How many in the second and third? How many in the first and fourth? How many in the second and the fourth? How many in the third and fourth?

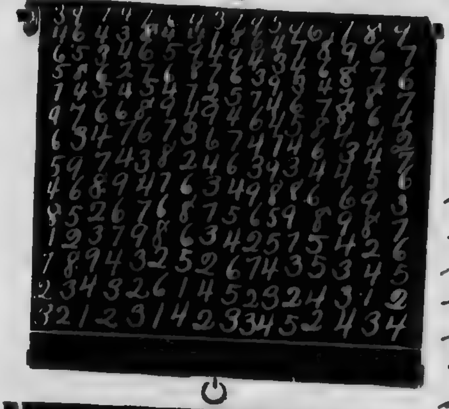
Which square contains the greatest number of circles? How many more does it contain than the first? How many more than the second?

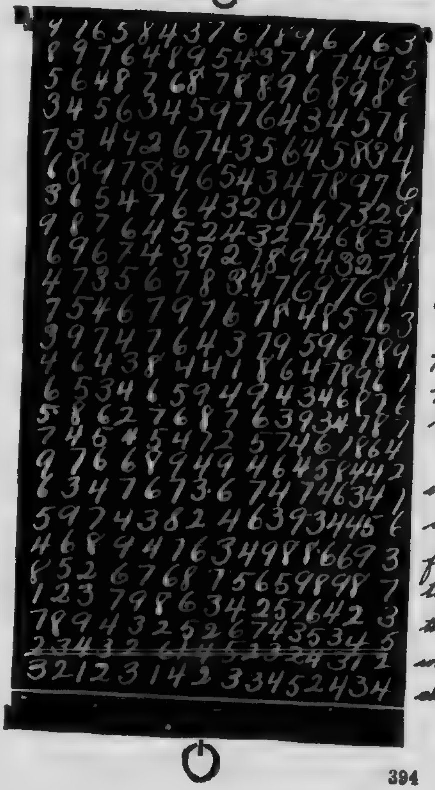
How many more does the fourth contain than both the first and second? How many more does the fourth contain than both the first and third? How many more does the fourth contain than the third? How many more does the fourth square contain than the other three together?

The above exercise can be used in almost an endless number of ways and will furnish scores of combinations. In all cases require the child to make the squares and circles, the teacher indicating the number of objects to be made.

Rapid Addition







Rapid Addition

Nine-tenths of the mechanical work in arithmetic is addition and multiplication and nearly all of the errors occur in one or the other of these simple operations.

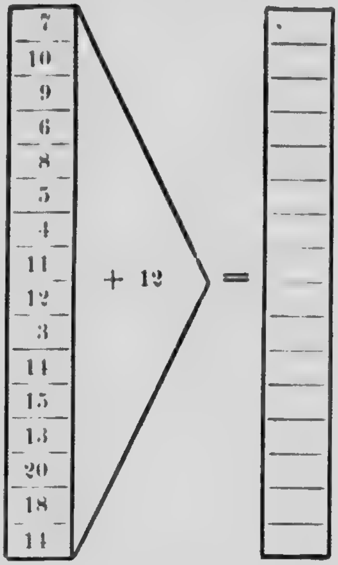
We give here one of the best devices ever invented for training pupils to add rapidly and accurately. Purchase a window shade roller, black oil cloth, and a tube of white paint. Put the figures on in a manner as shown in the cut opposite. By raising and lowering the shade the depth can be increased or diminished. No chalk dust, or time wasted in making erasures and writing figures for practice.

Fifteen minutes daily practice for six months with this chart pupils acquire a rapidity of 75 to 150 per minute in addition, their previous speed usually being about 8 to 12 figures per minute.

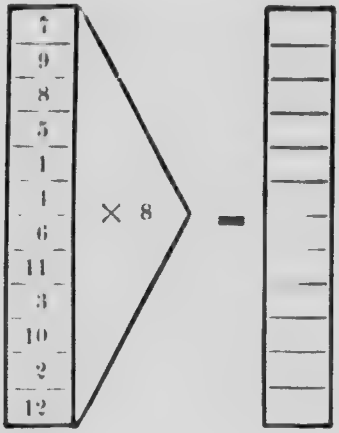
Have your children try adding with this chart and time them with a watch and see how many figures they add per minute, note their improvement as it will be something marvelous. The sum can be written with crayon at the bottom of the chart and erased at pleasure.

Devices for Busy Work.

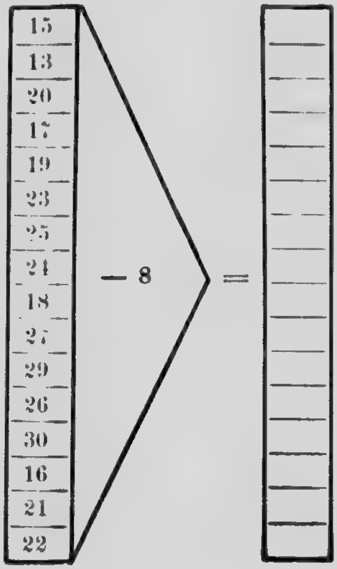
Place the sum of twelve and each number in the square on the left in the opposite space on the right.



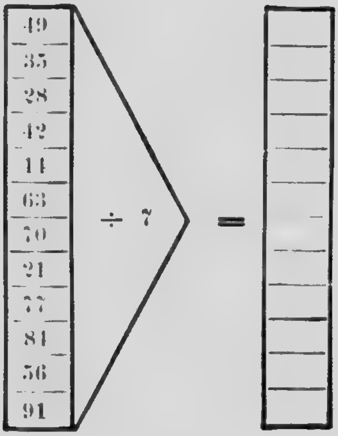
Place the product of eight and each number in the square on the left in the corresponding square on the right.



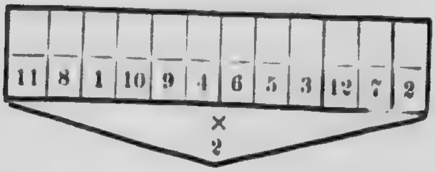
Place the difference in these spaces.



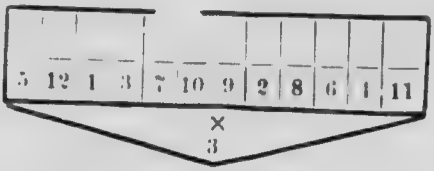
Place the quotient in these spaces.

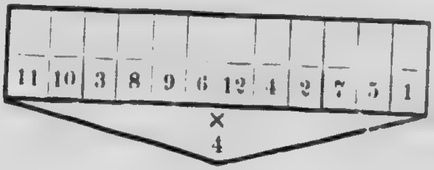


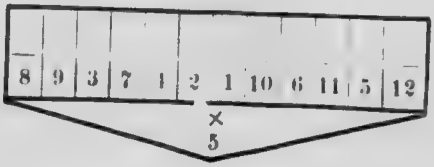
Charts for the Multiplication Tables.

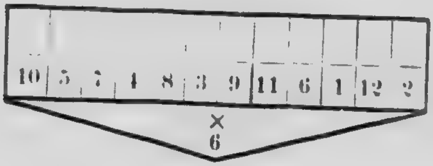


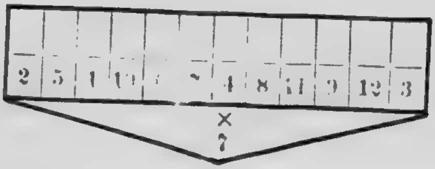
Place the product of two and each number in the square in the blank square above. For example, place 22 in the blank above 11. Have the pupils make the diagram. Insist upon neat figures and drawings and accurate computations.

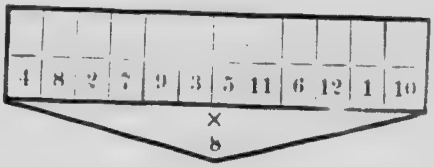


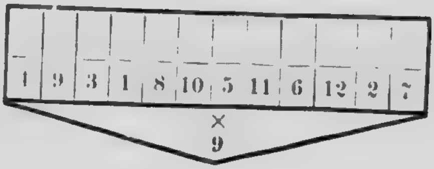


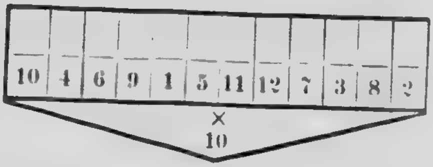


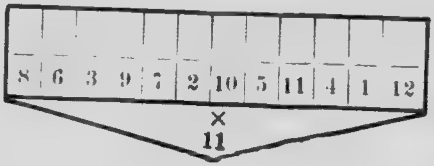


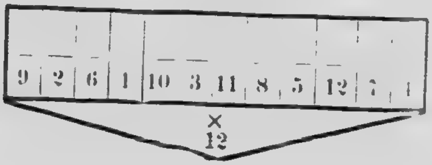




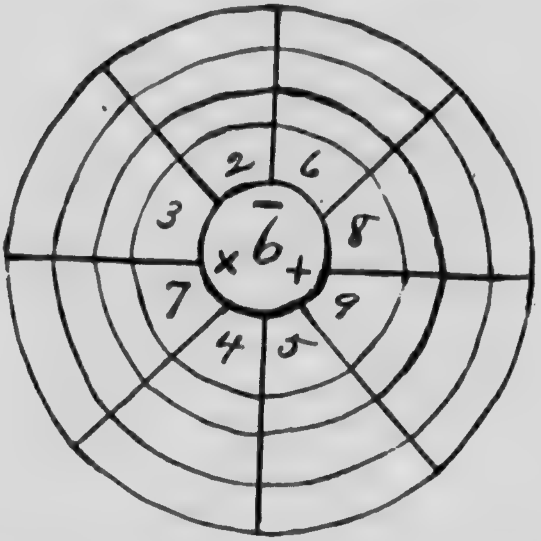








Device for Busy Work.



These concentric circles can be drawn by the students, either evenly or otherwise. Most children will take pride and delight in finding materials by which to draw the circles equally distant apart. Strings may be used.

In the first space place the sum of 6 and the numbers surrounding 6.

In the second space place the difference between 6 and the numbers surrounding 6.

In the third space place the product of 6 and the numbers surrounding 6.

Change the number in the center of the circle and continue the exercises. This will furnish both oral work and seat work for the children. After the oral work is done the children will find busy work in making the circles and filling the spaces with the results.

☞If the figure in the second space is larger than the figure in the first space, reverse the order in subtraction, subtracting the smaller from the larger one.

Put Off Town.

Did you ever go to Put Off Town,
Where the houses are old and tumbled-down,
And everything tarries and everything drags,
With dirty streets and people in rags?

On the street of Slow lives old man Wait
And his two little boys named Linger and Late,
With unclean hands and tousled hair,
And a naughty sister named Don't Care.

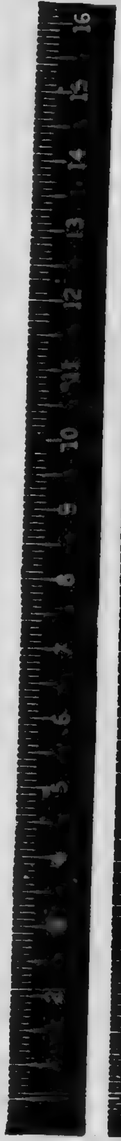
Did you ever go to Put Off Town
To play with the little girls Fret and Frown?
Or go to the home of old man Wait,
And whistle for his boys to come to the gate?

To play all day on Tarry street,
Leaving your errands for other feet,
To stop or shirk or linger or frown
Is the nearest way to this old town.

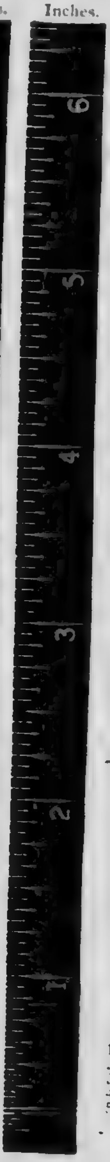
Metrical Weights and Measures.

The French Metrical System is based upon the (assumed) length of the fourth part of a terrestrial meridian. The tenth-millionth part of this arc was chosen as the unit of measure of length, and called a *Metre*. The cube of the tenth part of the metre was adopted as the unit of capacity, and denominated a *Litre*. The weight of a litre of distilled water at its greatest density was called a *Kilogramme*, of which the thousandth part, or *Gramme*, was adopted as the unit of weight. The multiples of these, proceeding in decimal progression, are distinguished by the employment of the prefixes *deca*, *hecto*, *kilo*, and *myria*, from the Greek, and the subdivisions by *deci*, *centi*, and *milli*, from the Latin:—

Centimetres.



Inches.



Measure of Length (Unit Metre).

Equal to	Inches.	Feet.	Yards.	Fathoms	Miles
Millimetre, or cubic centim...	0.03937	0.003	0.001	0.000	0.000
Centimetre	0.39371	0.032	0.010	0.005	0.000
Decimetre	3.93708	0.328	0.109	0.054	0.000
Metre	39.37079	3.280	1.093	0.546	0.000
Decametre	393.70790	32.808	10.936	5.468	0.000
Hectometre	3937.07900	328.089	109.363	54.681	0.062
Kilometre	39370.79000	3280.899	1093.633	546.816	0.621
Myriametre	393707.90000	32808.991	10936.330	5468.165	6.213

Cubic, or Measures of Capacity (Unit Litre).

Equal to	Cub. In	Cub. Feet.	Pints.	Gallons.	Bshls.
Millilitre, or cubic centim...	0.06103	0.000	0.001	0.000	0.000
Centilitre, 10 cubic do.	0.61027	0.000	0.017	0.002	0.000
Decilitre, 100 cubic do.	6.10271	0.003	0.176	0.022	0.002
Litre, or cubic Decimetre	61.02705	0.035	1.760	0.220	0.027
Decalitre, or Centistere	610.27052	0.353	17.607	2.200	0.275
Hectolitre, or Decistere	6102.70515	3.531	176.077	22.009	2.751
Kilolitre, or Stere	61027.05152	35.316	1760.773	220.096	27.512
Myrialitre, or Decastere	610270.51519	353.165	17607.734	2200.966	275.120

Measures of Weight (Unit Gramme).

Equal to	Grains.	Troy oz.	Avoir. lb.	Cwt.=112 lb.	20 cwt
Milligramme	0.01543	0.000	0.000	0.000	0.000
Centigramme	0.15432	0.000	0.000	0.000	0.000
Decigramme	1.54323	0.003	0.000	0.000	0.000
Gramme	15.43235	0.032	0.002	0.000	0.000
Decagramme	154.32349	0.321	0.022	0.000	0.000
Hectogramme	1543.23488	3.215	0.220	0.001	0.000
Kilogramme	15432.34880	32.150	2.204	0.019	0.000
Myriagramme	154323.48800	321.507	22.046	0.196	0.009

Square, or Measures of Surface (Unit Are).

Equal to	Sq. Feet.	Yards.	Perches.	Roods.	Acres.
Centiare, or sq. metre	10.764299	1.196	0.039	0.000	0.000
Are, or 100 sq. metres	1076.429934	119.603	3.953	0.098	0.024
Hectare, or 10.000 sq. m.	107642.993419	11960.332	395.382	9.884	2.471

TABLE FOR CONVERTING METRIC WEIGHTS AND MEASURES.

Metres into yards.		Kilometres into miles and yards.			Litres into gallons and quarts.			Hectolitres into quarters and bushels		
1 =	1.094	1 =	0	1094	1 =	0	0.880	1 =	0	2.751
2 =	2.187	2 =	1	427	2 =	0	1.761	2 =	0	[illegible]
3 =	3.281	3 =	1	1521	3 =	0	2.641	3 =	1	[illegible]
4 =	4.374	4 =	2	855	4 =	0	3.521	4 =	1	[illegible]
5 =	5.468	5 =	3	188	5 =	1	0.402	5 =	1	[illegible]
6 =	6.562	6 =	3	1282	6 =	1	1.282	6 =	2	[illegible]
7 =	7.655	7 =	4	615	7 =	1	2.163	7 =	2	[illegible]
8 =	8.749	8 =	4	1709	8 =	1	3.043	8 =	2	6.010
9 =	9.843	9 =	5	1043	9 =	1	3.923	9 =	3	0.761
10 =	10.936	10 =	6	376	10 =	2	0.804	10 =	3	3.512
20 =	21.873	20 =	12	753	20 =	4	1.608	20 =	6	[illegible]
30 =	32.809	30 =	18	1129	30 =	6	2.412	30 =	10	2.536
40 =	43.745	40 =	24	1505	40 =	8	3.215	40 =	13	6.048
50 =	54.682	50 =	31	122	50 =	11	0.019	50 =	17	1.561
60 =	65.618	60 =	37	498	60 =	13	0.823	60 =	20	[illegible]
70 =	76.554	70 =	43	874	70 =	15	1.627	70 =	24	[illegible]
80 =	87.491	80 =	49	1251	80 =	17	2.431	80 =	27	[illegible]
90 =	98.427	90 =	55	1627	90 =	19	3.325	90 =	30	[illegible]
100 =	109.363	100 =	62	243	100 =	22	0.039	100 =	34	3.121
200 =	218.727	200 =	124	487	200 =	44	0.077	200 =	68	[illegible]
300 =	328.090	300 =	186	730	300 =	66	0.116	300 =	103	[illegible]
400 =	437.453	400 =	248	973	400 =	88	0.155	400 =	137	[illegible]
500 =	[illegible]	500 =	310	1217	500 =	110	0.193	500 =	171	[illegible]

How to Have a Good School

PHYSICAL CONDITIONS.

1. Desirable.
    a. Commanding view for schoolhouse site.
    b. A well-kept, neat, attractive yard of ample size.
    c. A neat, well-painted, commodious building with large covered porch, cloakrooms, closets for supplies, and small library room.
    d. Adjustable seats, good pictures on the walls, etc.
    e. A good wood shed.
2. Necessary.
    a. Good outbuildings; suitable fuel in abundance.
    b. A good supply of pure water.
    c. Proper ventilation and proper lighting of schoolhouse.
    d. Suitable apparatus and supplies.
    e. Sanitary surroundings.

THE SCHOOL BOARD.

1. Should take a personal interest and pride in the success of the school.
2. Should coöperate with the teacher, and give her all the encouragement and help possible without making themselves troublesome.
3. Should be loyal to the teacher and support her, if possible, in all trouble growing out of school discipline.

THE PATRONS.

1. Should give their hearty support to the teacher and not let local quarrels or factions disturb the school.
2. Should visit the school occasionally and should, if possible, go when specially invited by the teacher.
3. Should pay little attention to the ordinary school tales of the children.
4. Should support the board and the teacher in their efforts to maintain a good school.
5. Should send their children to school on time every day, if possible.

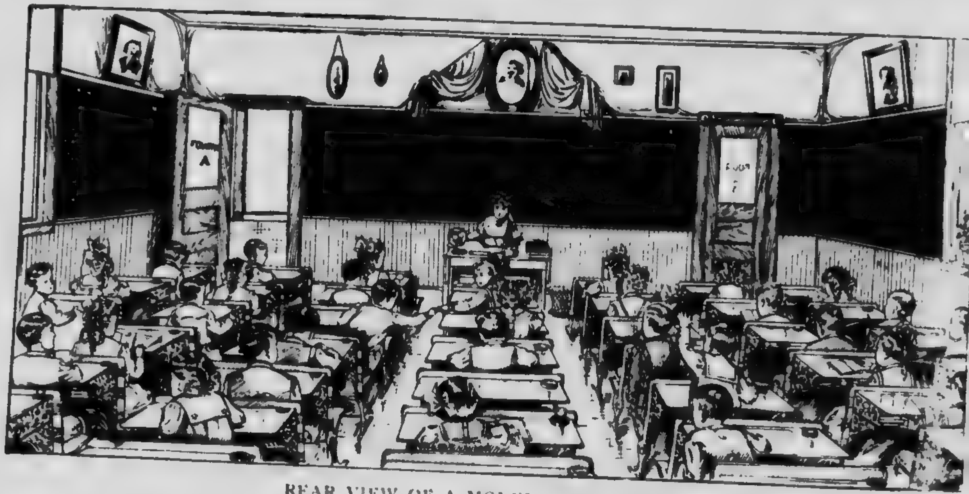
THE PUPILS.

1. Should attend school *regularly*, and be *on time* always, if possible.
2. Should have their lessons prepared on time every day.
3. Should take pride in the good name of the school.
4. Should help in all ways they can to make the school a success. This they can do by being regular and prompt; by attending closely to the business of the hour, whatever it may be; by being cheerful, good-natured, and ready to obey the teacher; by being ready at all times to help those who need their help on the playground or on the way to and from school.

THE TEACHER.

The teacher is the life of the school. "As is the teacher so is the school." If the teacher is cross, irritable, and unsympathetic, the school cannot be a good one, no matter how favorable the conditions otherwise. On the other hand, an earnest, sympathetic, capable teacher will do much to redeem the most unpromising situation.

1. *She should be master of the situation.* She should show good generalship. Teachers who have much or long continued trouble with the discipline are not good generals. They lack tact, good sense, firmness, courage, scholarship, interest in the work, training, pleasing and forceful personality, or some other thing; but the lack is there, and they should analyze themselves till they find out what is wrong and then remedy the fault or quit the business of teaching.
2. *She should be courteous and dignified*, not easily annoyed or angered. This does not mean that she should be indifferent to disorder or inattention on the part of the pupils to their duty. She should greet her pupils pleasantly, but not gush over them; should so conduct herself that they will feel free with her, but not familiar; their respect should be deep and genuine. This can be brought about only when the teacher is earnest, sympathetic, dignified, and competent, living for and with her school.
3. *She should be prompt*, never tardy in getting to school, never tardy in her work in the schoolroom, never tardy in calling school to order, but never in too great a hurry to get away from the schoolhouse at noon or at the close of the day. (Some teachers remain at the schoolhouse much longer than is necessary. This is an unfortunate habit, for the air is usually bad, and a change of scene after the labors of the day is much to be desired.)



REAR VIEW OF A MODEL SCHOOLROOM.

4. *She should be firm*, and should be so confident of herself that she can talk in low, decisive tones without threat or bluster even under the most trying circumstances.
5. *She should be natural*, should be herself. But the natural self should be ladylike, dignified, courteous, alert, and active.
6. *She should be physically well.* Doubtless many good teachers are not blessed with good health, but this is a great misfortune at best, and it makes successful work much more difficult. Often people suffer needlessly for years because they fail to get the advice of competent physicians. Often people are not well simply because they do not pay proper attention to the well-known laws of health.
7. *She should be progressive and up-to-date.* "Only growing teachers are fit to lead growing pupils." And she should have a good reference library, spend some time in her own personal advancement, and know *how* to use THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA.

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(Mutual Book Co., 1903)

PHYSICAL CULTURE IN SCHOOLS

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8. *She should be devoted.* "Teaching demands consecrated lives and the time and energies of the most gifted."
9. *She should be prepared.* "The most prepared teacher works in the light of the educational thought and experience of all the ages."
10. *She should be just.* Otherwise pupils will not respect her and her influence will be minimized.
11. *She should be tactful.* The tactful teacher will avoid many unnecessary conflicts and disagreeable situations.
12. *She should be courteous.* A schoolroom is a poor place for a timid, shrinking soul. The teacher should be a leader, fearless, conscious of her own power, and self-possessed, even when most sorely tried. The teacher who does her duty has the support of the laws, the school board, the enlightened public sentiment of the district and, best of all, her own conscience. A teacher should so teach and so govern that she will not in the years to come have to blush at the recollection of her weakness or cowardice. Often she will be in doubt, as to what is best to do, but she should throw her fears to the wind in settling the question.

SO FAR AS THE PUPILS ARE CONCERNED, THE TESTS OF SOUND CLASS DISCIPLINE ARE:

1. Prompt and willing obedience.
2. Close attention.
3. Pleasure in giving satisfaction to the teacher.
4. Eagerness to answer questions combined with thoughtful answering.
5. Good manners and right conduct generally.
6. Thoroughness in work.
7. Good order without unnecessary physical restraint; collective and individual self-control.

THE RECITATION.

In the recitation the battle is lost or won. Success here almost invariably means a good school. Failure here means failure all along the line. The teacher's purpose must not be merely to hear the children say over some things they may have learned from books, but she must look upon the recitation as the chance of her life as a teacher, and as the chance of the child's life in its development. The lines must be drawn tight; the electric spark must fly and the child's life must be quickened. All things must be conducive to this end.

Here we find the immense value of THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA, as it gives us methods, materials, and plans, and we get results when otherwise recitations would be dull and uninteresting.

METHODS OF CONDUCTING RECITATIONS.

1. Speak—
    a. In low tones.
    b. Distinctly.
    c. Not too rapidly.
2. Do not prompt or assist—
    a. In the recitation.
    b. In examination.
3. Be polite to pupils.
4. Do not repeat—
    a. Questions.
    b. Answers.
5. Govern yourself.
6. Govern your pupils.

7. Prepare for recitation.
8. Let your words and acts be worthy of your profession.
9. Be—
    a. Original.
    b. Enthusiastic.
    c. Energetic.
    d. Spirited.
    e. Sympathetic.
    f. Kind.
    g. Cheerful.
    h. Firm.
    i. Self-possessed.
    j. Dignified.
    k. Patient.

ENDS IN TEACHING.

Ends to be obtained in teaching—
1. Knowledge.
2. Power.
3. Skill.
4. Character building.

SUGGESTIONS TO TEACHERS.

Wake up! Whether you are a sleepy teacher or a sleeping teacher, it is simply time for you to wake up. Your pupils see that you are stupid and slow and they are running away from you. You are wasting precious time and allowing golden opportunities to go by unimproved.

Wash up! A sleepy teacher needs to wash up. Nothing but a good body bath and vigorous rubbing will bring him out of his stupor and start circulation. The sleepy teacher is sure to be slovenly in person as well as slovenly in his schoolroom and in his work.

Brush up! Your clothing as well as your hair needs brushing at least once a day. Dust your books, your desk, and the furniture generally about the schoolroom. Have you failed to notice the cobwebs in every corner, the old rusty stove, and the greasy looking blackboards? But you need to brush up mentally still more.

Brace up! Your despondency and hesitancy have almost unfitted you for any aggressive action.

Look up! It is a vision that awakens and quickens and inspires. It is outlook that calls forth impulse and simplifies power and vitalizes faith.

Work up! The notion that youth is the only time to learn died long ago. The teacher who holds a first grade certificate is simply a little better prepared to learn than the one who holds a second or third grade—that is all.

Keep up! It is not enough to work up; you ought to keep up also. No matter what your attainments may be, you will quickly fall behind if you slacken effort.

Note. "Three things you need to succeed: Learning, piety, and common sense. If you lack the first, go to college and use good books; if the second, pray earnestly to God for it; if you lack the third, neither man nor God can help you."

Such was the suggestion of an old Scotch divine to a candidate for the ministry. It needs little modification to apply to the teacher.

Dont's.

Don't stand too near the class.
Don't take hold of a pupil to put him in line.
Don't censure trifling errors severely.
Don't complain or grumble.
Don't criticise the teacher who preceded you.
Don't, as a rule, sit while teaching.
Don't give commands when you might give suggestions.
Don't show temper in dealing with parents.
Don't dispute with an angry parent before the school.
Don't make spiteful remarks about parents.
Don't try to teach without good order.

(Method Book, Opp. 402)

WORK IN THE KINDERGARTEN.

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Don't suppose the children like to have their own way. They like to be governed.
Don't try to drown noise by a greater noise.
Don't call for order in general terms.
Don't be strict to-day and lax to-morrow.
Don't force children to sit long in the same position.
Don't punish without explanation.
Don't allow whispering.
Don't punish by pulling ears or slapping.
Don't question in rotation.
Don't repeat a question for the inattentive.
Don't try to teach too much in one lesson.
Don't be satisfied with partial answers.

FRONT VIEW OF A MODEL SCHOOLROOM.

Don't talk too much.
Don't think when you have told your pupils something you have TAUGHT them something.
Don't tempt pupils by the self-reporting system.
Don't fail to get acquainted with the people in the district, particularly the members of the school board.
Don't fail to devise some sort of exercise occasionally to bring out and interest the parents.
Don't arouse the emotional nature of sensitive children too much.
Don't fall into the habit of repeating answers. Occasional repetition for a purpose is allowable.
Don't be satisfied with one correction of an error.
Don't fail to drill and review systematically upon the important matters you have tried to teach.
Don't forget that it is your business to TEACH as well as to hear pupils recite lessons.
Don't forget that teaching and governing a school is a difficult art, which requires study and painstaking effort.
Don't fail to encourage your pupils to do their best.
Don't drive if you can lead.
Don't let your school run away with you. GOVERN THE SCHOOL WHATEVER YOU DO OR FAIL TO DO.

Don't forget that the best way to govern is to GIVE PUPILS PLENTY OF INTERESTING AND PROFITABLE WORK TO DO. The teacher who succeeds in working up an abiding interest in study will have little trouble with discipline.

Don't fall into the habit of repeating "Quickly!" "Carefully!" "Quietly!"

Criticisms that are Frequently Made by those who Inspect Country Schools.

"The teacher does not make intelligent use of the common school manual."

"Pupils are not prepared for the work they are undertaking."

"The teacher is indifferent; lacks interest."

"The teacher spends too much time and exhausts her energies in attending parties."

"The teacher does not keep a neat and orderly desk."

"The teacher does not know how to explain difficulties."

"The teacher does not call school on time in the morning, at noon, or at recess."

"The teacher eagerly watches the clock and seems eager to get away."

"The teacher is slow and pokey."

"The teacher does not teach, but stands in a helpless way and lets the class exercise go on as best it may."

"The teacher is a poor writer and cannot stimulate the pupils to write well."

"The teacher is a poor reader and cannot help the pupils to acquire the art of reading in a pleasing and intelligent manner."

"The teacher fails to see or take notice of the disorder."

"The teacher has not a strong grip upon the school, but 'fights it out' every day as best she can."

"The people of the district are not interested in the school and the teacher does not know how to improve the school sentiment in the community."

"The teacher is timid, afraid of the pupils, the school board, and the patrons."

"The teacher lacks life and animation and the school is dead."

"The schoolroom is not decorated and looks dingy and forbidding."

"The outbuildings are in bad condition."

"The room is not properly heated, lighted, or ventilated."

"There is little or no apparatus."

"The library is not properly used or properly taken care of."

"The teacher does the janitor work and she does not do it well. The fire is not built in time to have it warm in the morning, the sweeping is not properly done, and the dusting is not properly attended to."

"The attendance is irregular and the pupils are frequently tardy."

"The teacher takes no pains in assigning lessons."

"There are too many recitations in the daily program."

"The teacher does not stimulate thought."

Some of the More Important Questions an Inspector or Superintendent Will Ask Himself and Answer from Observation when He Visits Your School.

1. Are the pupils at their seats studying or otherwise properly employed?
2. Are they at work in a vigorous manner, sitting in good position and seemingly enjoying their work?
3. Are the pupils watching the teacher and taking advantage of every opportunity to engage in sly forms of disorder, such as whispering, note passing, throwing paper wads, changing seats, etc.?
4. Do pupils find frequent excuse for getting up and moving about the schoolroom?
5. Are pupils loud and boisterous in the schoolroom when dismissed or at recess?

6. Are the recitations for the older pupils vigorous, thinking exercises, combined with suitable drill exercises? Are the recitations for the younger pupils animated and bright?
7. Do the pupils seem to enjoy the recitation or do they appear listless and bored?
8. Does the teacher hold the close attention of all her pupils during every recitation?
9. Which does she seem to get hold of best in the class exercises, the older or the younger children? How is this fact to be accounted for?
10. Does the teacher seem alert, vigorous, self-poised, competent? If not, is the failure due to lack of health, lack of nourishment, lack of sleep, lack of interest, lack of knowledge, lack of training?
11. Does she seem well prepared on every recitation she attempts to hear?
12. Has she a good program which she follows? Has she a study program for pupils to follow?
13. Does the teacher keep the records properly?
14. Does she study individual pupils so as to know what they are most interested in and what their ambitions are?
15. Does she get to school in good season every day, and call school promptly in the morning, noon, and at recess?
16. Does she "keep in" to a marked extent?
17. What are her favorite modes of punishment? Are they satisfactory modes?
18. Is her schoolroom neat, orderly, homelike?
19. Is her clothing clean, neat, and orderly?
20. Does she adapt her work to the children's needs?
21. Does she criticise faulty work intelligently and in a manner to impress the children?
22. Does she illustrate the lessons in a simple, effective way?
23. Does she show pupils to do what they lack skill in doing? Does she explain the difficult points in the lesson in such manner as to make it simple for the children to grasp?
24. Does she assign lessons with painstaking care, but without waste of time?
25. Does she talk too much or too little?
26. Is her manner bright and enthusiastic or cold and heavy?
27. What is her greatest strength? Her greatest shortcoming?
28. Are the outbuildings clean?

Education in Literature.

'Tis education forms the common mind,
Just as the twig is bent, the tree's inclined.
—*Pope.*

Learning by study must be won
'Twas ne'er entailed from sire to son.
—*Gay.*

How empty learning, and how vain is art,
But as it mends the life, and guides the heart!
—*Young*

Knowledge is proud that he has learned so much;
Wisdom is humble that he knows no more.
—*Cowper.*

Eternal smiles his emptiness betray,
As shallow streams run dimpling all the way.
—*Pope.*

It is a good divine that follows his
Own instructions; I can easier teach twenty
What were good to be done, than be one
Of the twenty to follow mine own teaching;
The brain may devise laws for the blood; but
A hot temper leaps o'er a cold decree.
—*Shakespeare.*

HISTORY CIVICS

HISTORY embraces the entire story of the development of man from the dawn of life to the present time. In its general aspect it is closely related to anthropology (q. v.), which is defined as the science of man and mankind.

THE NEW TEACHERS' AND PUPILS' CYCLOPAEDIA treats all historical topics of general interest. It considers history, not only as a subject of study, but treats it in its relation to science and literature. This form of treatment enables the student to obtain the greatest amount of help, not only from the standpoint of historical reading, but also by coming in touch with the essence of historical facts and prominent men and women in the development of nations and institutions.

The articles treating of the nations, states, and provinces contain subheads designated as *History*, in which numerous references are made to the achievements that belong particularly to the titles under which they appear. All the more important historical topics, such as ALABAMA CLAIMS, BLACK FRIDAY, HOME RULE, LONG PARLIAMENT, REFORMATION, SUCCESSION WARS, etc., are treated in special articles. The history of Canada and the United States is referred to in almost every historical article related to modern times.

CORRELATED SUBJECTS.

Alabama Claims
Alexander the Great
Anthropology
Ashburton Treaty
Attila
Aztecs
Babylonish Captivity
Basel, Council of
Bible
Bill of Attainder
Christianity
Civilization
Civil War
Cleopatra
Confederate States
Constantine the Great
Constitution
Crédit Mobilier
Crusades
Egyptology
Ethnology
Far Eastern Question
Feudalism
Folklore
Frederick the Great
French Revolution
God
Goths
Gunpowder
Hannibal
Hanseatic League
Heraldry
Hieroglyphics
Holy Alliance
Holy Roman Empire
Huguenots
Income Tax
Indians
International Law
Jews
Koran
Languages
Literature
Louisiana Purchase
Magna Charta
Man
Mohammedanism
Money
Mythology
Papal States
Pharisees
Political Parties
Parliament
Plebeians
Pragmatic Sanction
Reconstruction
Religion
Renaissance
Revolution
Romulus
Rosetta Stone
Saracen
Seven Years' War

Shay's Rebellion.
Slavery
Succession Wars
Talmud
Tariff

Thirty Years' War
Troy
Underground Railroad
Vandals
War

William the Conqueror
Witchcraft
York, House of
X Y Z Correspondence
Zollverein

Questions in History.

Define history and biography.

What is meant by organized society?

Define a nation, a race, a people.

Mention some of the sources of history.

Why is the subject of geography important to a study of history?

Why are prehistoric times divided into the Stone Age, the Age of Bronze, and the Age of Iron?

Define chronology and tell why it is important in the study of history.

Classify the Tartars, the Egyptians, the Persians, the Romans, the Germans.

Compare the history of civilized nations with the history of uncivilized nations.

Speak of the relative value of intellectual, industrial, and religious development in the growth of civilization.

Define folklore and mythology.

Mention the names of two Roman, two German, two English, and two American historians.

From and to what periods do ancient, medieval, and modern history extend?

Write a thesis on the *Philosophy of History*.

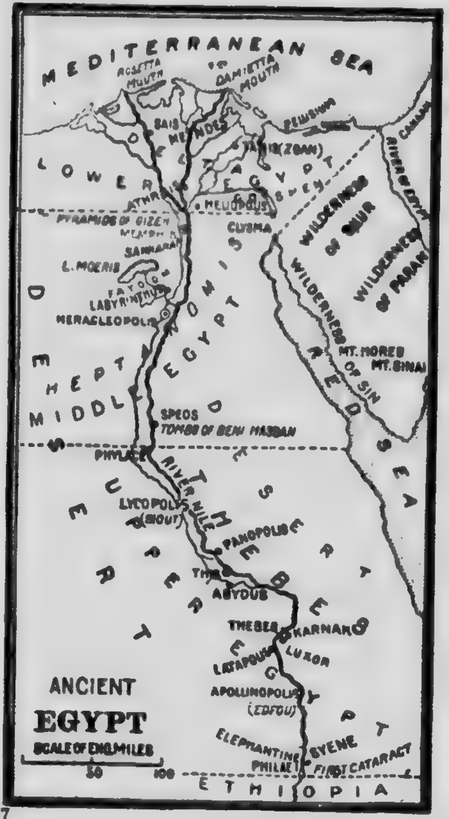
Chronological History.

Part I.—Ancient History.

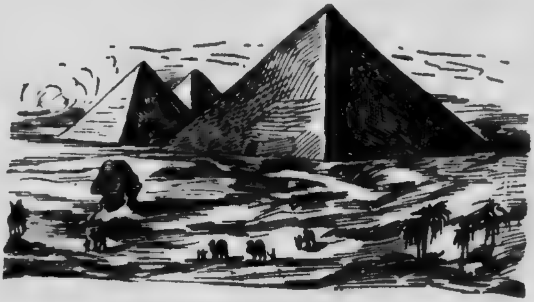
FROM 8000 B. C. TO 476 A. D.

Dawn of History (about 8000 years before the birth of Christ).

6000. Civilization and industry thrived in Babylonia.
5000. First Egyptian Dynasty, beginning with Menes.
4000-1500. Assyria subject to the kings of Babylonia.
3800. Sargon I., the oldest Chaldean king.
3000. The Aryan migration to the valley of the Indus.
3000. Chinese nation came into the basin of the Yellow River from the west.
1300. Chaldea surpassed by Assyria.
1300. Exodus of Israelites from Egypt.
1015. Reign of Solomon and building of the temple.
1010. David, King of Israel, made Jerusalem the capital.
975. Division of the kingdom into Israel and Judah.



722. Sargon, one of the great conquerors and builders of Assyria, carried the Ten Tribes into captivity.
705. Sennecherib came to the throne of Assyria.
604. Nebuchadnezzar, King of Babylonia.
586. Nebuchadnezzar captured Jerusalem and virtually ended the separate political life of the Hebrew race.
558. Reign of Cyrus the Great, King of Persia, begins.
555. Fall of Babylon.
551. Birth of Confucius, the Chinese philosopher.
446. Herodotus in Athens.


PYRAMIDS AT GIZEH, EGYPT.

OBELISK OF NIMROD, FOUNDER OF BABYLONIA.

334. Overthrow of the Persian empire by Alexander the Great.
333. Beginning of the empire of the Ptolemies.
204. Great wall of China completed.

Greece.

1300. Kingdom of Mycenae in Greece at the height of its prosperity.
546-539. Cyrus, King of Persia, conquered the Greek cities of Asia Minor.
510. Constitutional reforms established at Athens by Clisthenes.
490. Battle of Marathon.
479. Battle of Plataea and Mycale, which victories by the Greeks concluded the Persian Invasion.
459. Age of Pericles begins. Citizens are taken into pay of the state, thus affording an equal distribution of political rights.
438. The Parthenon completed at Athens.
431. Peloponnesian War begins.
404. { Surrender of Athens to the Spartans.
Beginning of Spartan supremacy.
401. Xenophon led the Retreat of the Ten Thousand.
399. Death of Socrates.
371. Theban supremacy.
336. Accession to the throne by Alexander the Great.
327. Alexander's conquest of India.
323. Death of Alexander at Babylon.
146. Defeat of the Greeks at Corinth; Greece became subject to Rome.

ALEXANDER THE GREAT.

Rome.

753. Legendary date of the founding of Rome.
390. Sack of Rome by the Gauls, and the city made a heap of ruins.

367. **Plebeians admitted to the Consulship.**
264. First Punic War between Rome and Carthage.
255. Regulus defeated in Africa by the Carthaginians.
218. Second Punic War; Hannibal crossed the Alps.
202. Hannibal defeated by Scipio in the Battle of Zama.
149-146. Third Punic War. Carthage became a Roman province.
59. Caesar made Consul and the first Triumvirate formed by Caesar, Crassus, and Pompey.
44. Assassination of Caesar by Cassius, Brutus, and other conspirators.
31. Battle of Actium and the defeat of Antony.

CAESAR.

CHRISTIAN ERA.

4 B. C. Jesus Christ is born.
9 A. D. Arminius, the German leader, defeated the Romans under Varus.
31. Christ is crucified under Pilate, the Roman procurator.
47. Britain subdued by the Romans.
64. Reign of Nero; Rome burned.
115. Roman Empire reached its greatest extent, Trajan being emperor.
306-337. Reign of Constantine the Great; the empire became Christian. Conversion of the Goths, Vandals, and other peoples to Christianity.
395. Final division of the Roman empire, by Theodosius, into that of the East and that of the West.
400. Invasion of Italy by the Germans.
410. Sack of Rome by Alaric.
During the 5th century the Teutonic or German races seized the western provinces of the Roman Empire, and began the wonderful migrations which spread their race over England, France, and Spain.
451. Battle of Chalons, by which Attila was driven back across the Rhine and Europe was saved for the Teutons.
476. Fall of the Roman Empire in the West.
527. Justinian, Emperor of the Eastern Empire, codified the Roman law, which is the foundation of modern jurisprudence.

Part II.—Medieval History.

FROM 476 A. D. TO 1492 A. D.

476-1100. Dark Ages.
572. Kingdom of the Lombards formed in Italy.
596. Conversion of the Anglo-Saxons in Britain through the efforts of Saint Augustine and his Monks.
622. Flight (Hegira) of Mohammed from Mecca to Medina, beginning the epoch of Mohammedan chronology.
664. Council of Whitby, by which the Celtic Church was absorbed by the Roman Church, and that Church became the ecclesiastical ruler of England, Scotland, and Ireland.
610-641. Reign of Heraclius. During this reign the glory of the second Persian empire was overthrown at the Battle of Nineveh, in 627. (b) The empire became Greek.
732. Battle of Tours, in France, by which the Saracens were driven back by the Christianized Germans of Europe and Europe was saved to Christianity.
780. Irene became famous as the empress of Byzantium.
1100-1500. Age of the Revival of Learning.
1453. Capture of Constantinople by Mohammed II., Sultan of the Ottomans, or Turks, and the overthrow of the Eastern Empire.

Charlemagne and the Restoration of the Empire in the West.

CHARLEMAGNE.

752. Pepin, son of Charles Martel, became the firs King of France.
755. Beginning of the temporal power of the popes the Papal States formed.
768-814. Reign of Charlemagne.

Northmen and the Conquest of England.

900. Invasion and partial conquest of England by the Danes, or Northmen.
918. Rollo, leader of the Northmen, obtained from Charles, King of France, a section of country in Gaul, which afterward became Normandy, and they were known subsequently as Normans.
1066. Norman conquest of England by William, Duke of Normandy.

1096-1272. CRUSADES.
1438. Invention of printing.

England.

1215. Magna Charta, first check on absolute government.
1265. Beginning of the House of Commons.
1282. Conquest of Wales.
1314. Battle of Bannockburn, and independence of Scotland for 300 years.
1324. Wycliffe and the English Reformation.
1336. Beginning of the Hundred Years' War between England and France.
1415. Henry V. defeated the French at Agincourt.
1455-1485. Wars of the Roses.

France.

987-996. Hugh Capet, king. The kingdom of France really begins.
1302. Creation of the States-General, which marks the admission of the Commons to the Feudal Assembly of France.
1473. Louis XI. began a war against the feudatory princes, who were defeated in a contest of nearly five years.

Spain.

1479. Union of Castile and Aragon, the beginning of modern Spain.
1492. Conquest of Granada and the overthrow of the Moors.

Beginnings of Germany.

962. Renewal of the Roman Empire by Otto the Great, a German king.
1388. Rise of the Swiss republic.
1415. John Huss burned at the stake.

Part III.—Modern History.

FROM 1492 TO THE PRESENT TIME.

1492. Discovery of America.
Dominion of the Moors in Spain terminated.
1497-1498. Voyage of Vasco da Gama to the East Indies around the coast of Africa.
1519-1522. Voyage of Magellan around the world.
Conquest of Mexico by the Spaniards.

Reformation in Germany.

1483-1546. Martin Luther, the Protestant reformer.
1491. Birth of Loyola, the founder of the Jesuits.
1519. John Calvin, reformer of Geneva.
1520. Burning of the Papal bull by Luther.
1555. Peace of Augsburg concluded the war between the Catholics and Lutherans.

MARTIN LUTHER.

Spain—(Continued).

1519-1556. Emperor Charles V. wars with German Protestants.
1556. Abdication of Emperor Charles and the crowning of his son, Phillip II.
1571. Phillip's crusade against the Moors and his defeat of the Turkish fleet at Lepanto.
1588. Spanish Armada sent by him against England.

England—(Continued).

1485-1603. Tudor kings of England. (b) Union of the Houses of Lancaster and York by the defeat of Richard on Bosworth Field.
1497. Cabot's discovery of the continent of America.
1534. Act of Supremacy, by which England, at the request of Henry VIII., was separated from the Church of Rome.
1558-1603. Reign of Queen Elizabeth.
1587. Mary, Queen of Scots, was beheaded.

QUEEN ELIZABETH.

Rise of the Dutch Republic.

1515-1555. Low Countries under Charles V. His persecution of the Protestants.
1579. Union of Utrecht, by which the seven Protestant States of the North were confederated as the Seven United Provinces of the Netherlands. William of Orange was the animating spirit of the confederacy.
1584. Assassination of the Prince of Orange at the instigation of the Spaniards.
1648. Peace of Westphalia, by which Spain formally acknowledged the independence of the Netherlands.

France—(Continued).

1562-1629. Huguenot wars in France.
1572. Massacre of Saint Bartholomew's Day.
1589. Henry of Bourbon, King of Navarre, became King of France.
1598. Edict of Nantes, which granted freedom of worship to the Huguenots.

Thirty Years' War.

1618-1648. Thirty Years' War, which was the last great combat between the Protestants and Catholics in Europe.
1632. Gustavus Adolphus, King of Sweden, defeated Wallenstein at the Battle of Lutzen.
1648. Treaty of Westphalia, which practically closed the religious wars.

France—(Continued).

1643. Accession of Louis XIV., who stands as the representative of absolute monarchy.
1648 Civil wars of the Fronde.
1685. Revocation of the Edict of Nantes.
1715. Death of Louis XIV.
1754. French and Indian War in America begins.

England Under the Stuarts.

1603-1714. Reign of the Stuarts.
1610. Completion of King James's version of the Bible.
1628. Petition of Right.
1640. Long Parliament.
1642-1649. Civil war.
1644. Scots defeated the English under Prince Rupert at Marston Moor.
1649. Charles I. beheaded by Parliament.
1649-1660. Commonwealth, with Cromwell as its guiding spirit, and the Puritans in control.
1660. Restoration of the Stuart kings.
1660-1685. Charles II.
1666. Great fire of London.
1685-1688. James II.
1688. The Revolution.
1689. Bill of Rights, check on royalty.
1702-1714. Queen Anne.
1760. Accession of George III.
1775. American Revolution.
1782. Legislative independence of Ireland.
1783. Peace of Paris. Independence of the United Colonies of America acknowledged by England.

Rise of Russia.

1654 Revolt of the Cossacks against Poland.
1682. Accession of Peter the Great, the real founder of Russia.
1772. Partition of Poland by Russia, Prussia, and Austria.
1792. Second partition of Poland by the same nations.
1795. End of the Polish kingdom by the final partition.

Rise of Prussia.

1611. Union of the Electorate of Brandenburg and the Duchy of Prussia, which the foundation of the Prussian kingdom was laid.

MARIA THERESA.

1640-1688. Frederick William.
1701. Frederick III., son of Frederick William, wa crowned as the first King of Prussia at Königberg.
1740-1786. Frederick the Great.
1748. Treaty of Aix la Chapelle ends the War of th Austrian Succession.
1756. Beginning of the Seven Years' War.
1814. German Confederation established.
1815. Defeat of Napoleon by Blücher and Wellingt

France—(Continued).

1789-1799. French Revolution; destruction of the Bastille.
1793-1794. Reign of Terror.
1795. Napoleon defended the Convention.

1799. Napoleon overthrew the Directory and became the First Consul of France.
1804. Napoleon proclaimed Emperor.

NAPOLEON BONAPARTE.

1811. Napoleon at the summit of his power.
1813. Battle of the Nations (Leipsic).
1814. Abdication of Napoleon.
1815. Napoleon began the *Hundred Days' Campaign.*
June 18th. Waterloo.
Louis XVIII. placed upon the throne of France.
1830. The Revolution.
1848. Second Republic.
1852-1870. Second Empire.
1870. Napoleon III. declared war against Germany.
1871. Third Republic; Thiers elected president.
1894. Assassination of President Sadi-Carnot.
1900. Paris Universal International Exposition.
1910. The public schools were neutralized from the direct influence of the church.

Russia—(Continued).

1801-1825. Alexander I. and the Holy Alliance.
1828-1829. The Russo-Turkish War.
1853-1856. Crimean War.
1858. Emancipation of the serfs.
1877-1878. Russo-Turkish War.
1904. War with Japan; Port Arthur surrendered.
1905. Treaty of Portsmouth closes the war; a constitution granted in all the Russias.
1911. Border war with China.

Modern Germany.

1815. Formation of the German Confederation.
1864. Schleswig-Holstein War.
1866. Seven Weeks' War between Austria and Prussia.
1867. Establishment of the North German Union.
1870-1871. Franco-Prussian War.
1871. Establishment of the German Empire.
1888. Accession of William II. to the throne.
1902. L[illegible]nd of Germany, Italy, and Austria-Hungary renewed.
1905. Dispute with France over the occupation of Morocco.
1911. Zeppelin completed his famous dirigible balloon.

WILLIAM I.

Italy.

1830-1831. The Revolution.
1848-1849. The Revolution.
1859-1860. Austro-Sardinian War.
1860. Sicily and Naples added to Victor Emmanuel's kingdom.
1870. Rome became the capital.
1893. Campaign against the Dervishes in Africa.
1900. Victor Emmanuel succeeded to the throne.
1905. Completion of the Simplon Tunnel between Italy and Switzerland.

England—(Continued).

GEORGE V.

1828. Disabilities removed from Protestants.
1829. Disabilities removed from Catholics.
1832. Reform Bill.
1837. Victoria ascended the throne.
1840-1842. Opium War with China.
1854-1856. Crimean War.
1867. Reform Bill.
1869. Disestablishment of the Irish Church.
1884. Reform Bill.
1898. Death of William E. Gladstone.
1899. Anglo-Boer War.
1902. Edward VII. ascended the throne.
1903. Irish Land Bill, providing for the sale of estates to tenants, instead of rents, passed by Parliament.
1910. George V. succeeded to the throne.

Sovereigns of England.

ANGLO-SAXON LINE.

Alfred, King of Wessex	871-901
Edward I., King of Wessex	901-925
Athelstan, King of England	925-940
Edmund I.	940-946
Edred	946-955
Edwy	955-959
Edgar	959-975
Edward II.	975-978
Ethelred	978-1016
Edmund II.	1016-1017

DANISH LINE.

Canute	1017-1036
Harold I.	1036-1039
Hardicanute	1039-1041

SAXON LINE.

Edward III.	1041-1066
Harold II.	1066-....

NORMAN LINE.

William I.	1066-1087
William II.	1087-1100
Henry I.	1100-1135

HOUSE OF BLOIS.

Stephen	1135-1154

HOUSE OF PLANTAGENET.

Henry II.	1154-1189
Richard I.	1189-1199
John	1199-1216
Henry III.	1216-1272
Edward I.	1272-1307
Edward II.	1307-1327
Edward III.	1327-1377
Richard II.	1377-1399

HOUSE OF LANCASTER.

Henry IV.	1399-1413
Henry V.	1413-1422
Henry VI.	1422-1461

HOUSE OF YORK.

Edward IV.	1461-1483
Edward V.	1483-....
Richard III.	1483-1485

HOUSE OF TUDOR.

Henry VII.	1485-1509
Henry VIII.	1509-1547
Edward VI.	1547-1553
Mary	1553-1558
Elizabeth	1558-1603

HOUSE OF STUART.

James I.	1603-1625
Charles I.	1625-1649

COMMONWEALTH.

Oliver Cromwell	1649-1658
Richard Cromwell	1658-1660

HOUSE OF STUART.

Charles II.	1660-1685
James II.	1685-1688

HOUSE OF ORANGE.

William III. and Mary II.	1688-1702

HOUSE OF STUART.

Anne	1702-1714

HOUSE OF HANOVER.

George I.	1714-1727
George II.	1727-1760
George III.	1760-1820
George IV.	1820-1830
William IV.	1830-1837
Victoria	1837-1901
Edward VII.	1901-1910
George V.	1910-....

Topical Study of United States History.

Five Periods.

I. Aboriginal Period	1492
II. Voyage and Discovery	1492 to 1607
III. Colonial Development	1607 to 1775
IV. Revolutionary Period	1775 to 1789
V. National Period	1789 to the Present Time

I. Aboriginal Period.

The Aborigines.

I. Mound Builders.
  1. Earthworks.
    a. Where found.
    b. Number.
    c. Shapes and sizes.
    d. Contents.
    e. Purposes.
  2. Time and origin.

II. Indians (See page 138).
  1. Time and origin.
  2. Number.
  3. Character and habits.
  4. Language.
  5. Government.
  6. Religion.
  7. Tribes.

Discovery of America by the Northmen.

I. Time. } Biarne Herjulfson 986
II. Persons. } Lief Eric 1001

III. Causes.

Herjulfson, sailing from Iceland to Greenland, was driven by a storm westward; he reported that he saw land, and Lief Eric determined to test the truth of this report.

IV. Places.

Labrador and the northeast coast of the United States. Some authorities claim the entire Atlantic coast was explored.

V. Evidences.

The annals of Iceland and the traditions of the Northmen.

VI. Results.

Nothing permanent. The country was named Vinland. Frequent voyages were made from Europe in the 12th, 13th, and 14th centuries.

In 1350 a plague depopulated Greenland and Iceland and all communication with the latter country ceased.

II. Period of Voyage and Discovery.

I. Christopher Columbus.
  (a) Birth.
  (b) Parentage.
  (c) Education.
  (d) Marriage.
  (e) Voyages.
  (f) Character.
  (g) Death.
  (h) Burial.

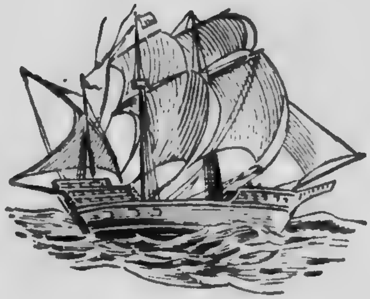
II. Discovery of America.
  (a) Time.
  (b) Persons.
  (c) Place.
  (d) Causes.
  (e) Hindrances.
  (f) Results.

Spanish Explorers and Discoverers.

1492. Columbus.
1499. Vespucci.
1512. Ponce de León.
1513. Balboa.
1517. Cordova.
1518. Grijalva.
1519-21. Cortez.
1519-21. Magellan.
1520. De Ayllon.
1528 Narváez.
1539-42. De Soto.
1531-36. Pizarro.
1540. Coronado.
1542. Cabrillo.
1565. Menéndez.

VESSEL OF THE NORTHMEN

SHIPS OF COLUMBUS
(The Nina, Pinta, and Santa Maria)



THE MAYFLOWER

INDIAN FAMILY

BLOCKHOUSE AT FORT DUQUESNE, PA.

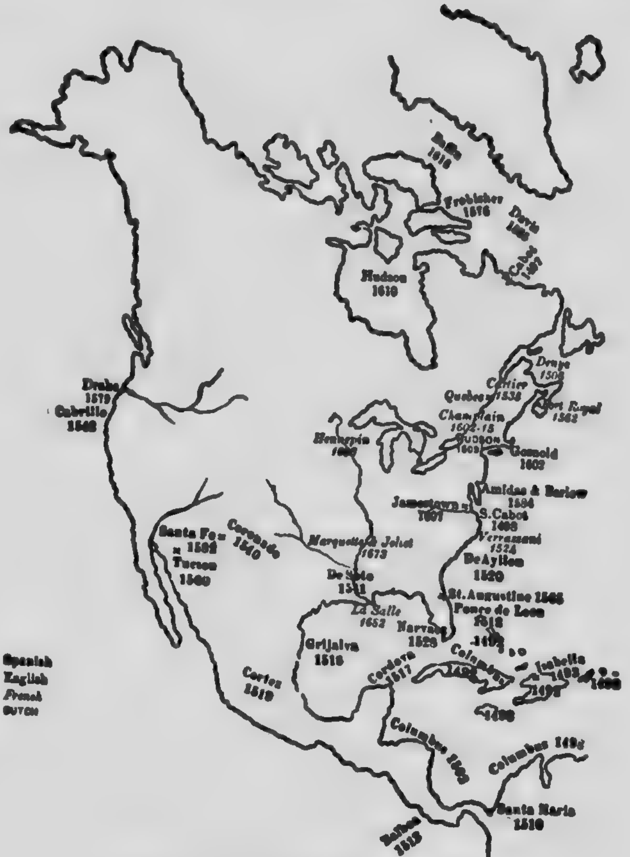
INDIAN VILLAGE NEAR QUEBEC

MOUNDS AND EARTHWORKS NEAR MARIETTA, OHIO

VIEWS FROM THE EARLY HISTORY OF NORTH AMERICA.

English Explorers and Discoverers.

1497. John Cabot.
1498. Sebastian Cabot
1576. Frobisher.
1579. Drake.
1579-83. Gilbert.
1584. Raleigh.
1584. Amidas and Barlow.
1585. Davis.
1586. Cavendish.
1587. White.
1602. Gosnold.
1603. Pring.
1605. Weymouth.



PERIOD OF VOYAGE AND DISCOVERY.

Dutch Explorers and Discoverers.

1609. Henry Hudson.
1614. Adrian Block.
1614. Cornelius May.
1614. Christianson.
1616. Baffin.

French Discoverers and Explorers.

1524. Verrazani.
1535. Cartier.
1562. Coligny.
1562. Ribault.
1564. Laudonniere.
1605. De Monts.
1608. Champlain.

Portuguese Navigators.

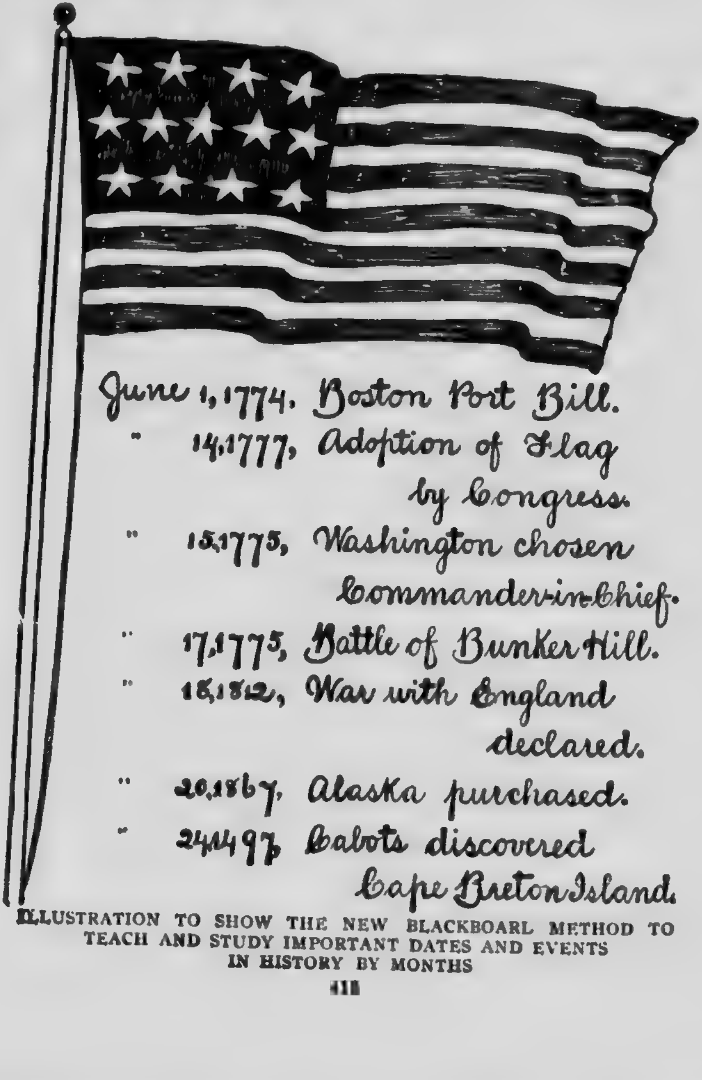
1497. Vasco da Gama.
1500. Cabral.
1501. Cortereal.
1515. Magellan.

III. Colonial Development.

Settlement of Virginia.

Object: Financial profit.

1606. London and Plymouth Companies.
1607. Settlement at Jamestown.
  Sir Walter Raleigh.
  Bartholomew Gosnold.
  John Smith.
1609. Second Charter.
1609-10. The Starving Time.
1612. Third Charter.
  Powhatan (Wahunsonacook).
1612. Cultivation of Tobacco.
1613. John Rolfe and Pocahontas.
1619. House of Burgesses.
1619. Introduction of Slavery.
1619. Importation of Women.
1621. Written Constitution Granted.
1622-44. Indian Massacres.
1660. Navigation Acts.
1673. Culpepper and Arlington.
1676. Bacon's Rebellion.
  Bacon's Laws.
1676. Governor Berkeley.
1688. Establishment of Free Schools.
1692. College of William and Mary.
1698. Williamsburg made the Capital



June 1, 1774. Boston Port Bill.
" 14, 1777, Adoption of Flag by Congress.
" 15, 1775, Washington chosen Commander-in-Chief.
" 17, 1775, Battle of Bunker Hill.
" 18, 1812, War with England declared.
" 20, 1867, Alaska purchased.
" 24, 1497, Cabots discovered Cape Breton Island.

ILLUSTRATION TO SHOW THE NEW BLACKBOARL METHOD TO TEACH AND STUDY IMPORTANT DATES AND EVENTS IN HISTORY BY MONTHS

Settlement of New York.

OBJECT: The Colonists sought freedom from religious persecution. It was the object of the Dutch West India Company to hold the territory for Holland.

1614. New Amsterdam.
1614. Fort Orange.
1624. Peter Minuit.
1629. Arrival of the Patroons.
1633. Wouter Van Twiller, 1959.
1637. William Kieft.
1647. Peter Stuyvesant.
Location of New Netherlands.
Location of New Sweden.
1655. New Sweden conquered by the Dutch.
1664. Surrender to the English.
1664-7. Richard Nichols.
1667-73. Francis Lovelace.
1673. Dutch captured New York.
1674. New York taken by the English.
1689-92. Career of Leisler.
1697-9. Sir William Kidd.
1734. Freedom of the Press established.
1741. Negro Plot.

Settlement of Massachusetts.

OBJECT: To obtain greater religious and civil freedom. The king had given the Pilgrims assurance that they would not be molested. The Council for New England, which had secured a charter from the king, sent the first colony of Puritans.

1620. Plymouth Colony.
1628. Massachusetts Bay Colony.
Number and Character of Settlers.
Puritans, Pilgrims, and Separatists.
Miles Standish.
John Carver.
William Bradford.
John Endicott.
Massasoit and the Indians.
Salem Settlement.
1630. Boston founded.
1634. First use of the Ballot Box.
1636. Harvard College Founded.
1639. Printing Press.
1649. Free Schools Established.
1656. Persecution of Quakers.
1675. King Philip's War.
1692. Salem Witchcraft.
Roger Williams and Anne Hutchinson.
1643-83. League of Colonies in New England.
1692. Union of Colonies in Massachusetts.

Settlement of New Hampshire.

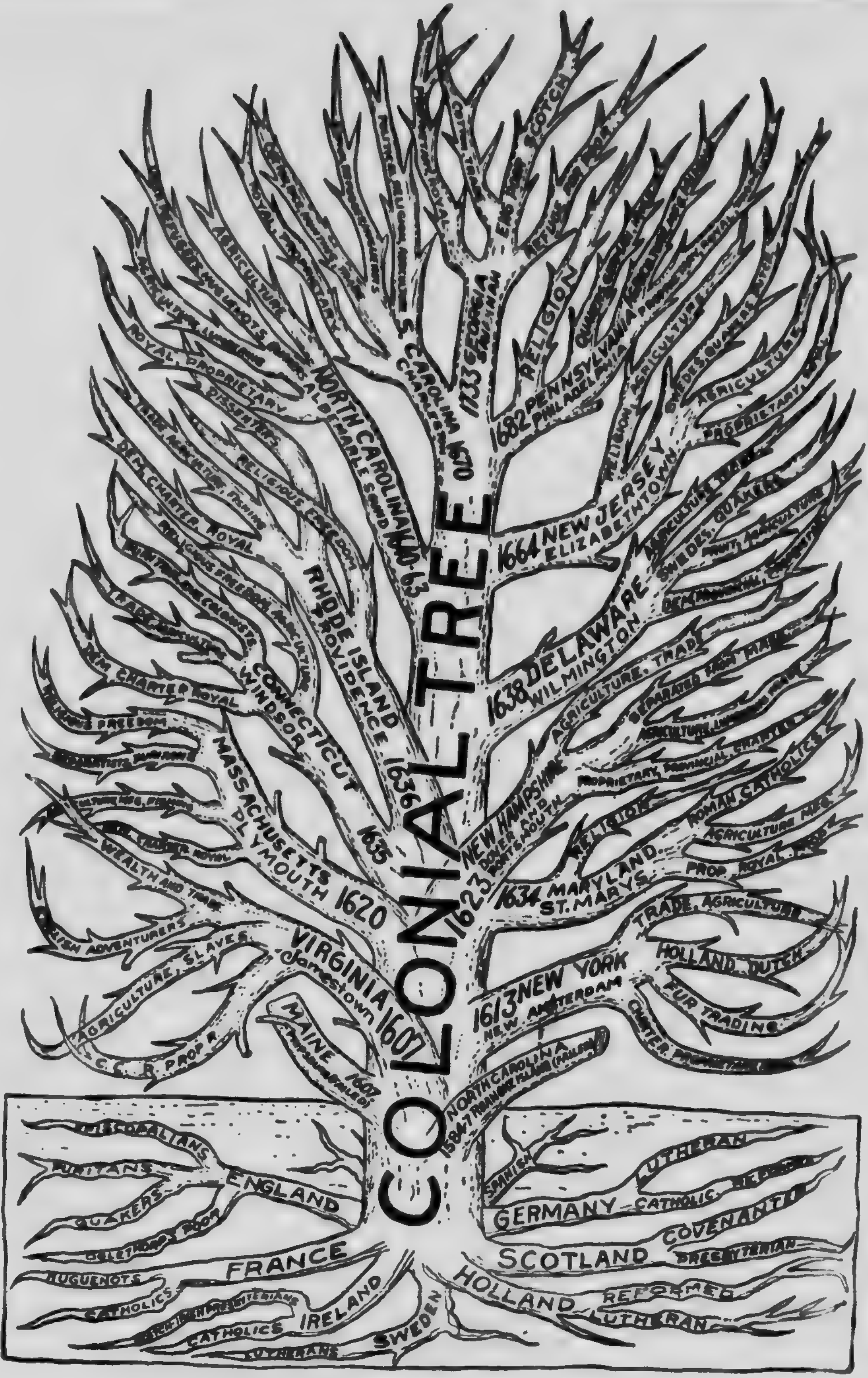
OBJECT: To promote trade.

1622. Mason and Gorges. 1942.
1623. Dover and Portsmouth.
1629. New Hampshire Grants. 1942.
1641. United with Massachusetts.
1769. Dartmouth College.
Dartmouth College Case. 755.
1775. Entered American Confederacy.
1780. Laconia Settled. 1528.

Settlement of Maryland.

OBJECT: To obtain religious liberty for persecuted Catholics.

1634. Settlement at Saint Mary's.
Cecil Calvert and Leonard Calvert.
Charter for Maryland.
1645. Clayborne's Rebellion.
1649. Toleration Act.
1655. The Civil War.
1691. Royal Government.
1715. Proprietary Charter.
1763-67. Mason and Dixon's Line.



ROOTS AND BRANCHES OF THE COLONIES.

Settlement of Connecticut.

OBJECT: To promote agriculture and have freedom in religious worship.

1631. Grant given to Lord Say and Sele.
1633. Dutch Settled at Hartford.
1635. Emigrants from Massachusetts. Saybr Founded.
1637. Pequ
1638. New [illegible]
1642. Establishment of a Free School.
1650. Dutch Relinquish Claims.
1687. Andros at Hartford.
1687-1856. Charter Oak.
1701. Yale College.
1708. Congregational Church was Established.

Settlement of Rhode Island.

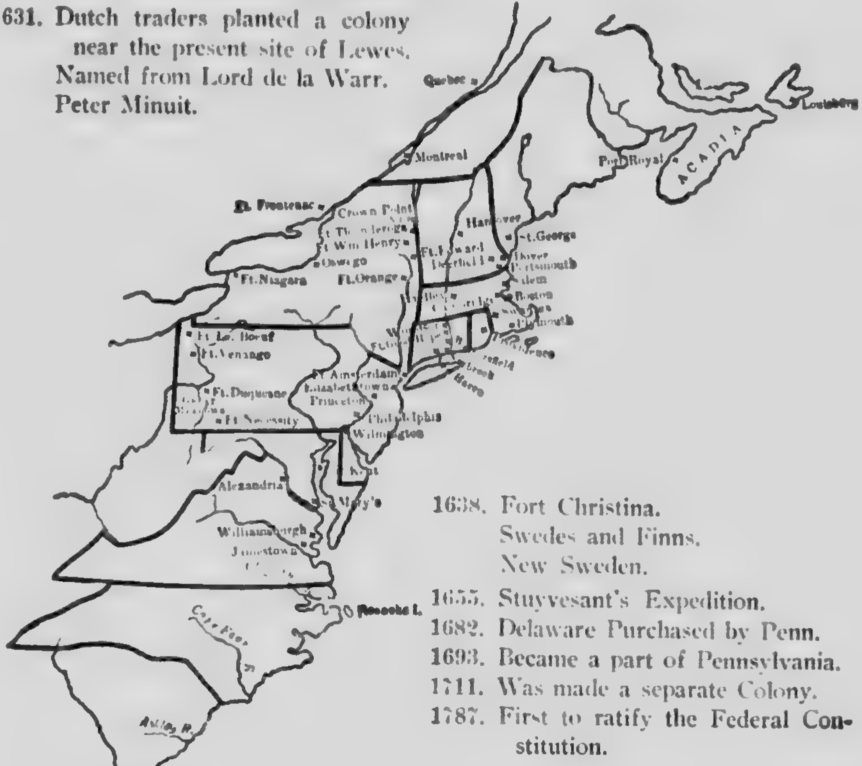
OBJECT: To obtain a separation of the Church from the State.

1636. Providence.
New England Immigrants.
Roger Williams.
1638. Newport.
William Coddington.
Anne Hutchinson.
1639. Baptist Church.
1643. First Charter.
1644. Union of Colonies.
1663. Second Charter.
1764. Brown University.
1790. National Constitution Ratified.

Settlement of Delaware.

OBJECT: To promote trade and agriculture.

1631. Dutch traders planted a colony near the present site of Lewes.
Named from Lord de la Warr.
Peter Minuit.



THIRTEEN COLONIES.

1638. Fort Christina.
Swedes and Finns.
New Sweden.
1655. Stuyvesant's Expedition.
1682. Delaware Purchased by Penn.
1693. Became a part of Pennsylvania.
1711. Was made a separate Colony.
1787. First to ratify the Federal Constitution.

Settlement of the Carolinas.

OBJECT: Both colonies were settled to develop agriculture and avoid political strife. The early settlers of South Carolina were likewise eager for greater religious freedom.

1562. French Protestants.
1584. Failure of Walter Raleigh.
1653. Roger Greene at Albemarle.
1670. Carteret Colony.
  Barbadoes.
  Old Charleston.
1670. The Grand Model.
1711. Indian Massacres.
1724. Divided into North and South Carolina.
1729. Royal Charter.

Settlement of New Jersey.

OBJECT: To develop agriculture.

1617. Dutch Settled at Bergen.
1623. English Built Fort at Camden.
  Region Claimed by the Swedes.
1655. Governor Stuyvesant Conquered the Swedes.
1664. Elizabethtown.
  Sir George Carteret.
  Philip Carteret.
  Lord Berkeley.
  East Jersey.
  West Jersey.
1682. William Penn Purchased East Jersey.
  Covenanters or Cameronians.
1702. Two Colonies United.
1738. Royal Colony Established.

Settlement of Pennsylvania.

OBJECT: To obtain religious liberty.

1643. Swedes Settled at Chester.
1655. Conquered by the Dutch.
1681. Grant to William Penn.
1682. William Penn and English Quakers.
  Philadelphia Founded by Penn.
  Cottage of Penn. 2183.
1683. The Great Treaty.
1683-1810. Elm, where Penn made Treaty. 2183.
1763-1767. Mason and Dixon's Line.
1774. First Continental Congress.
1775. Second Continental Congress.

Settlement of Georgia.

OBJECT: To obtain a home for poor debtors and freedom for the Protestant

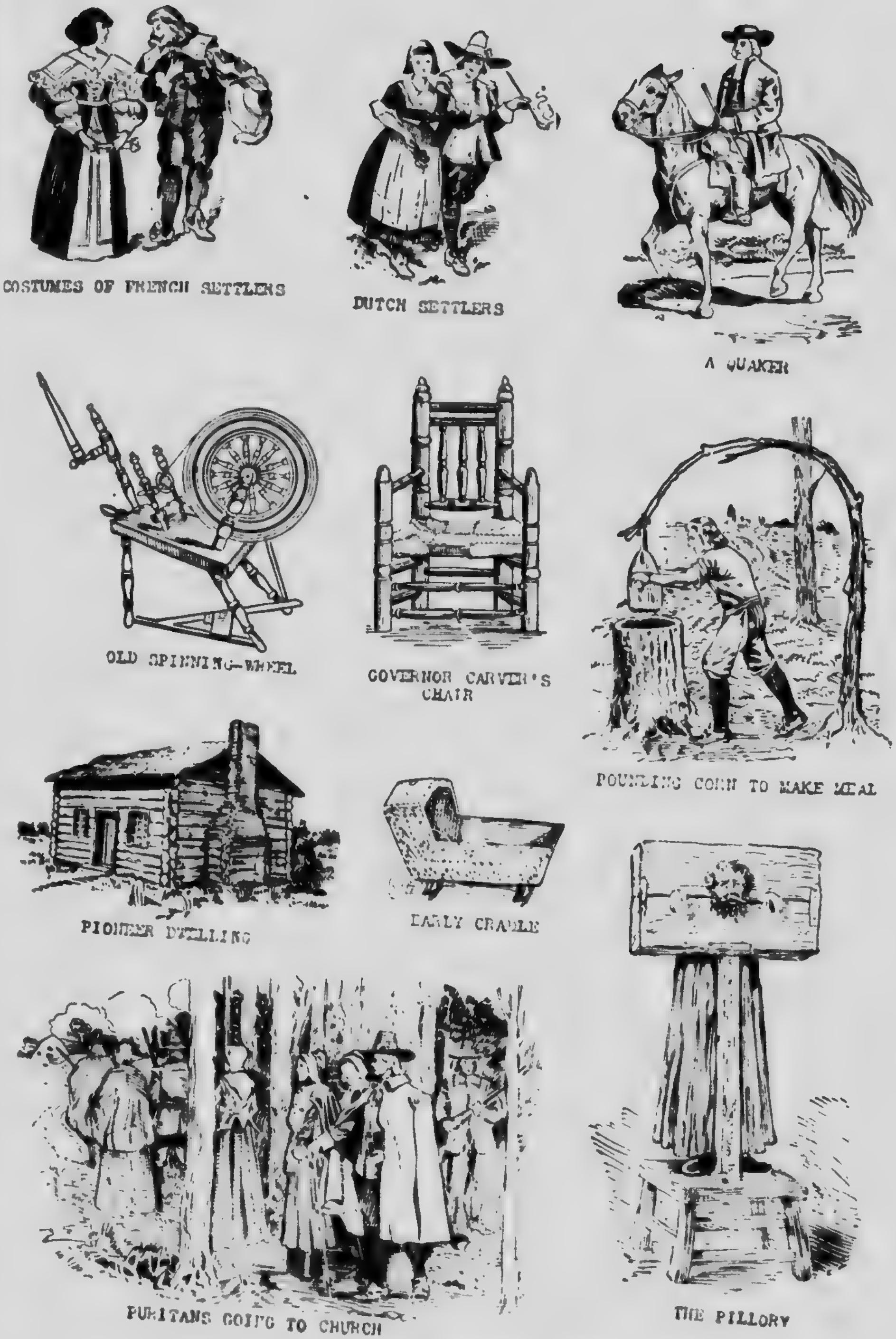
1733. Savannah Settled.
  James Oglethorpe.
  Silk and Cotton.
  German Protestants.
  Restriction on Colony.
1735. Charles Wesley and John Wesley.
  George Whitefield.
  Founding of the Methodi Church.
  Slavery and Rum.
1751. Royal Charter Granted.
1776. Supported the Revolution.

Missionaries.

I. Jesuit.
  La Salle.
  Marquette.
  Hennepin.
  Joliet.
  Raille.
II. English.
  John Eliot.
  Thomas Mayhew.
  Daniel Gookin.

Forms of Colonial Government.

I. Royal Province or Provincial Government.
II. Charter Government.
III. Proprietary Government.
IV. Commercial Association.
V. Voluntary Association.



COSTUMES OF FRENCH SETTLERS

DUTCH SETTLERS

A QUAKER

OLD SPINNING-WHEEL

GOVERNOR CARVER'S CHAIR

POUNDING CORN TO MAKE MEAL

PIONEER DWELLING

EARLY CRADLE

PURITANS GOING TO CHURCH

THE PILLORY

LIFE AND VIEWS FROM PIONEER HISTORY OF NORTH AMERICA.

Intercolonial or French and Indian Wars.

King William's War.

1689 to 1697.

Causes of.
Attack on Schenectady.
Attack on Haverhill.
Capture of Acadia.
1697. Treaty of Ryswick.
Congress of the Northern Colonies.

Queen Anne's War, or the War of the Spanish Succession.

1702 to 1713.

Cause of.
Deerfield.
Port Royal or Annapolis.
Governor Moore.
Charlestown.
Nova Scotia.
1713. Treaty of Utrecht.

Spanish War.

1739 to 1744.

Causes of.
Attack on Saint Augustine.
Results of.

King George's War, or the War of the Austrian Succession.

1744 to 1748.

Cause of.
Burning of Canso.
1745. Capture of Louisburg.
James Wolfe. 1634.
Important Results.
1748. Treaty of Aix-la-Chapelle.

French and Indian War.

1754 to 1763.

Commanders in chief:
- (a) English—
  - (1) Edward Braddock.
  - (2) William Shirley.
  - (3) Lord Loudon.
  - (4) Abercrombie.
  - (5) Jeffrey Amherst.
- (b) French—
  - (1) Baron Dieskau.
  - (2) Marquis de Montcalm.

Causes of { 1. Remote.
{ 2. Immediate.
The Ohio Company.
Washington's Journey.
Fort Duquesne.
Fort Necessity.
Great Meadows.
Albany Council.
Acadia.
Braddock's Defeat.
Braddock's Funeral Service.
Second Expedition Against Fort Duquesne.
Fort Niagara.
Fall of Quebec.
Pontiac's War.
Treaty of Paris.

Colonial and Continental Congresses.

I. Albany Council.

1754.

Place (Albany, N. Y.).
Proposition of—(A plan for the union of the colonies).
Treaty of—(Made a treaty with Indians).

II. First Colonial or Stamp-Act Congress.

Oct. 7, 1765.

Place (New York City).
Cause (Stamp Act).
Colonies Represented (9).
Declaration of Rights and Grievances.

III. Second Colonial or First Continental Congress.

Sept. 5, 1774.

Place (Philadelphia).
Cause (Opposition to England).
Number of Delegates (53).
Colony not Represented (Georgia).
Carpenter's Hall.
Measures Adopted.

IV. Second Continental Congress.

May 10, 1775.

Place (Philadelphia).
Cause (Battles of Lexington and Concord).
Petition.
Paper Money.
Commander in Chief of United States Army (George Washington).

V. Continental Congress of 1776.

Place (Philadelphia).
Declaration of Independence.
Committee sent to France.
Articles of Confederation.

The Main Provisions made by the Congresses of 1777, 1778, 1779 and 1780 were to carry on the war of the Revolution.

Thirteen Original Colonies in 1763.

Population.
Number of Slaves.
Largest Cities.
Area and Boundary.
Forms of Government.
Language.
Religion.
Slavery.
Trade.
Mode of Travel.
Postal Service.
Hospitality.
Laws.
Rights of Colonial Governors.
Education.
Literary Men.

Causes of the Revolutionary War.

1660. Navigation Act.
1733. Importation Act, Molasses Act or Sugar Act.
1761. Writs of Assistance.
1765. Stamp Act.
1765. First Colonial Congress.
1766. Declaratory Act.
1767. Townshend Act.
1768. Mutiny Act.
1770. Boston Massacre.
1773. Boston Tea Party.
1774. Boston Port Bill.
1774. First Continental Congress.
Taxation without Representation.
Influence of France on the Colonies.
Rulings of George III.
Right of Arbitrary Government.

IV. Revolutionary Period, 1775-1789.

War of the Revolution.

1775 to 1783.

Commanders in Chief:
- (a) English—
  1. Thomas Gage.
  2. Sir William Howe.
  3. Sir Henry Clinton.
  4. Sir Guy Carleton.
- (b) American—
  1. George Washington

Events of 1775.

Battle of Lexington.
Ticonderoga and Crown Point.
Second Continental Congress.
Battle of Bunker Hill.
Gage's Proclamation.
Mecklenburg Resolutions.
Battle of Quebec. 2350.
1775-1776. Siege of Boston.

U.W.O. EDUCATION LIBRARY
U.W.O. EDUCATION LIBRARY

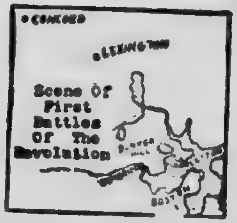
1775

LEXINGTON

AND

Apr. 19, CONCORD (A)
May 10, Ticonderoga Taken (A)
May 12, Crown Point Taken (A)
June 17, Bunker Hill Battle (B)
Nov. 13, Montreal Captured (A)
Dec. 31, Assault on Quebec (B)
TROOPS ENLISTED - 37,363

RIDE OF PAUL REVERE



1776

INDEPENDENCE

July 4, DECLARED
Mch. 4, Dorchester Heights (A)
Mch. 17, Boston Evacuated (A)
June 28, Fort Moultrie (A)
Aug. 27, Long Island (B)
Oct. 28, White Plains (I)
Nov. 16, Fort Washington (B)
Dec. 26, Trenton (A)
TROOPS ENLISTED - 89.761

DECLARATION OF INDEPENDENCE LIBERTY BELL.

1777

BURGOYNE'S

Oct. 17, SURRENDER (A)
Jan. 3, Battle of Trenton (A)
April 26, Danbury Burned (B)
Aug. 16, Bennington (A)
Sept. 11, Brandywine (B)
Sept. 19, Bemis Heights (I)
Oct. 4, Germantown (B)
Nov. 16-18, Fort Mercer (B)
TROOPS ENLISTED - 68.720

BATTLE OF SARATOGA

1778

EVACUATION

OF

June 16, PHILADELPHIA (A)
Feb. 6, French Alliance (A)
June 28, Battle of Monmouth (A)
July 3-4, Wyoming Massacre (F)
Aug. 29, Newport (A)
Nov. 11, Cherry Massacre (F)
Dec. 29, Savannah Taken (H

1779 RETRIBUTION

Aug. 29,	PUNISHMENT OF INDIANS	(A)
Feb. 14,	Kettle Creek	(A)
Feb. 25,	Vincennes Taken	(A)
Mch. 3,	Briar Creek	(B)
July 16,	Stony Point	(A)
Sept.23,	Paul Jones' Victory	(A)
Oct. 9,	Savannah Taken	(B)

TROOPS ENLISTED - 44,275

SULLIVAN DEFEATS THE IROQUOIS

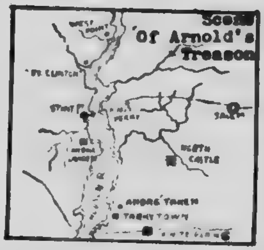
Newtown,-Scene of Sullivan's Victory

1780 TREASON

Sept.23,	OF ARNOLD	(B)
Apr. 14,	Monk's Corner	(B)
May 12,	Charleston Captured	(B)
May 29,	Waxhaw Creek	(B)
Aug. 6,	Hanging Rock	(A)
Aug. 16,	Battle of Camden	(B)
Oct. 7,	King's Mountain	(A)
Nov. 20,	Blackstock	(A)

TROOPS ENLISTED - 43,079

CAPTURE OF ANDRE

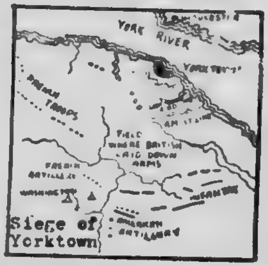

Scene Of Arnold's Treason

1781 YORKTOWN

Oct. 19,	SURRENDER	
Jan. 17,	Battle of Cowpens	(A)
Mch. 15,	Guilford Courthouse	(B)
Apr 25,	Hobkirk's Hill	(B)
Apr. 26,	Fort Watson	(A)
Sept. 6,	New London Burned	(B)
Sept. 8,	Eutaw Springs	(I)

TROOPS ENLISTED - 29,340

SURRENDER OF CORNWALLIS


Siege of Yorktown

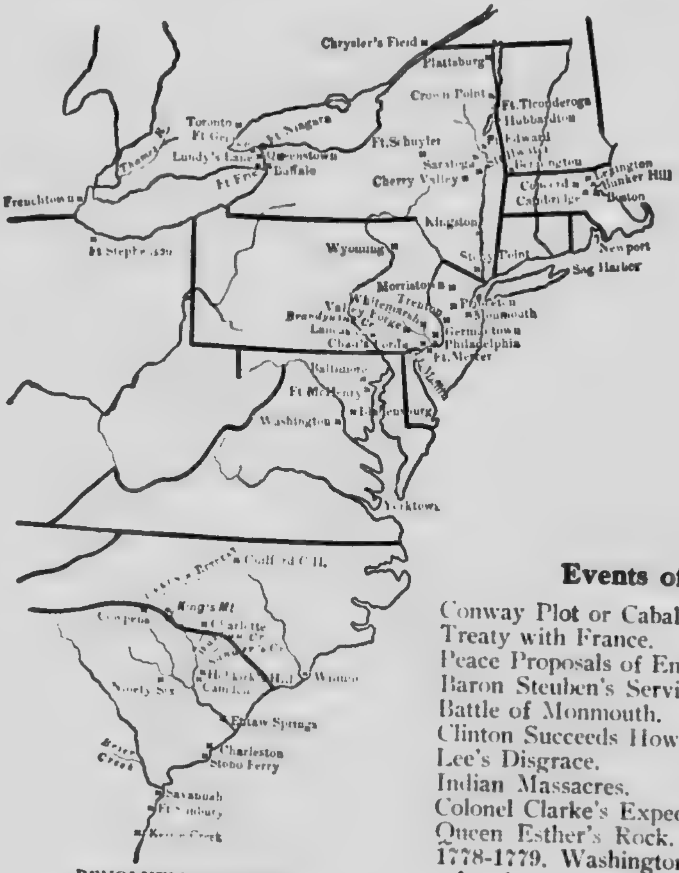
LIBERTY, which is taken as the key word to study the events of the Revolution in America, should be kept in mind by the student and those who need to use historical facts at a moment's notice. It introduces the period by enabling us to recall Lexington and the Ride of Paul Revere and serves as a reminder of the great turning points of that period, ending with the surrender of Cornwallis at Yorktown.

Events of 1776.

- Fort Moultrie.
- Lee's Resolution.
- Declaration of Independence.
- Hessian Allies.
- Tories, Loyalists, or Royalists.
- Patriots or Whigs.
- Battle of Long Island.
- Washington's Retreat.
- Nathan Hale.
- Battle of White Plains.
- Battle of Trenton.
- Franklin, Deane, and Lee.

Events of 1777.

- Washington at Morristown.
- Continental Bills.
- Need of Money.
- Robert Morris.
- Victory at Princeton.
- Burgoyne's Expedition.
- Battle of Bennington.
- Battle of Brandywine.
- Battle of Germantown.
- First Battle of Saratoga.
- Second Battle of Saratoga.
- The Stars and Stripes.
- Morgan's "Sharpshooters."
- Turning Point of the Revolution (Battle of Saratoga).
- Acceptance of Articles of Confederation by Congress.
- 1777-78. Washington at Valley Forge, Pa.



REVOLUTIONARY WAR.

Events of 1778.

- Conway Plot or Cabal.
- Treaty with France.
- Peace Proposals of England.
- Baron Steuben's Services.
- Battle of Monmouth.
- Clinton Succeeds Howe.
- Lee's Disgrace.
- Indian Massacres.
- Colonel Clarke's Expedition.
- Queen Esther's Rock.
- 1778-1779. Washington at Middlebrook, N. J.

Events of 1779.

British Army in the South.
Movements in South Carolina.
Capture of Stony Point.
Poor Richard and the *Serapis*

Events of 1780.

Fall of Charleston.
Partisan Warfare in the South.
Hanging Rock.
Battle of Camden.
King's Mountain.
Arnold's Treason.
1780-81. Army at Morristown, N. J.

Events of 1781.

Mutiny.
Greene's Retreat Through South Carolina.
Battle at Cowpens.
Greene at Steel's Tavern.
The Catawba, Yadkin and Dan Rivers.
Guilford Court House.
Hobkirk's Hill.
Eutaw Springs.
Siege of Yorktown.
Surrender of Cornwallis.

Miscellaneous Topics.

1782. George III's Speech on United States.
    Sons of Liberty.
    Daughters of Liberty.
1783. Treaty of Versailles or Paris.
1783. Boundary of United States.
    Cost of Revolutionary War—
        a. England.
        b. United States.
Cradle of Liberty.
Five Intolerable Acts.
Minutemen.
Father of the Revolution.
Shay's Rebellion.
Paul Revere's Ride.
Green Mountain Boys.
The Ship of State.
Virginia and Connecticut Reserves.
Ordinance of 1787.
The Gerrymander.
The Third Term Tradition.
Sanitary and Christian Commissions.
Sheridan's Ride.
The Owenite Communities.
Blue Lodges.
The Brownists.
Congress Lottery.
Starved Rock.
Ticket Money.
Western Reserve. 1996.
Virginia Military District. 1996.

Articles of Confederation.

When framed by Congress? (1776-1777.)

When adopted by the States? (1777-1781.)

When in force? (March 1, 1781.)

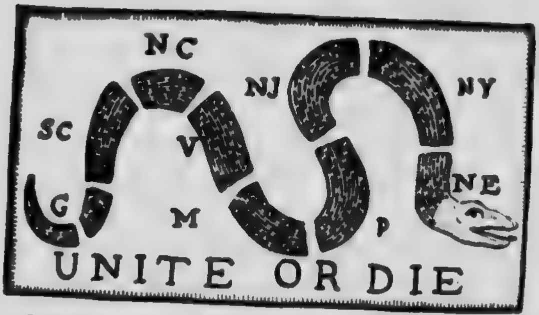
When and how did the colonies become States?

Nature of Government?

Leading Defects—
  a. No taxing power.
  b. No power to regulate trade.
Issue of Paper Money.
Legal Tender Acts.
Amendments proposed?
Why not amended?
Attempts of States to Regulate Trade.
Trade Convention of Annapolis. (1786.)

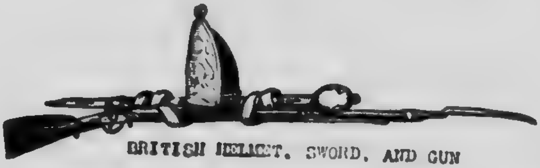
Constitutional Convention.

Time. (May 14 to Sept. 17, 1787.)
Place. (Independence Hall, Philadelphia.)
Number of members. (55.)
Father of the Constitution. (James Madison.)
President of the Convention. (Washington.)
The Virginia and New Jersey plans.
Adoption of Virginia plan.
Adoption of the Constitution. (Sept. 17, 1787.)
First and last states to adopt it. (Delaware and Rhode Island.)
The New Roof. (Constitution called by the Federalists.)

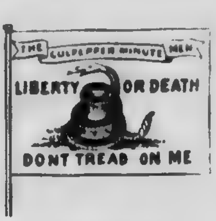


DEVICE SUGGESTING UNION IN THE REVOLUTION

SAINT JOHN'S CHURCH, RICHMOND, VA.

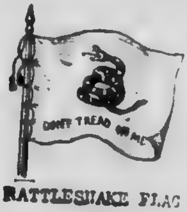


BRITISH HELMET, SWORD, AND GUN



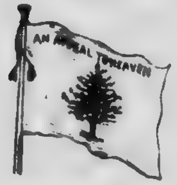
VIRGINIA MINUTEMEN'S FLAG

FAST MAIL IN 1776



RATTLESNAKE FLAG

STAGE BETWEEN NEW YORK AND PHILADELPHIA



PINE-TREE FLAG

OLD NORTH CHURCH, BOSTON

INDEPENDENCE HALL, PHILADELPHIA, IN 1

VIEWS TAKEN FROM THE REVOLUTIONARY PERIOD.

History Studied by the Administrations

V. National Period.

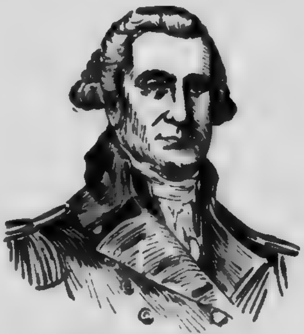
1789 to Present Time.

1789 to 1797.

George Washington of Virginia, President.

John Adams of Massachusetts, Vice President.

Politics of the Administration (Federal).



GEORGE WASHINGTON.

1789. Inauguration (April 30).
1789. Washington's Cabinet.
1789. Chancellor Livingston.
1789-1791. First Ten Amendments, or Bill of Rights.
1790. First Census: Population, 3,229,219.
1790. Death of Franklin.
1790. National Capital.
1791. United States Bank.
1791. Vermont Admitted.
1792. United States Mint.
1792. Free Coinage.
1792. Admission of Kentucky.
1793. Citizen Genet.
1793. First Cotton Gin.
1794. Whiskey Insurrection.
1795. Jay's Treaty with England.
1795-1798. Federal Money.
1795. Treaty with Algeria.
1796. Change of Naturalization Period to five years.
1796. Admission of Tennessee.
1796. Political Parties and Candidates.
  (a) Federal, John Adams and Thomas Pinckney.
  (b) Anti-Federal, Thomas Jefferson and Aaron Burr.
  Issue, Jay's Treaty with England.

1797 to 1801.

John Adams of Massachusetts, President.

Thomas Jefferson of Virginia, Vice President.

Politics of the Administration (Federal).

JOHN ADAMS.

1798. X Y Z Papers.
1798. Department of Navy established.
1798-1800. Trouble with France.
1798. Alien and Sedition Laws.
1798. Kentucky Resolutions.
1798. National Song.
1798. Eleventh Amendment.

"PROVIDENCE

Whiskey Insurrection

LEFT

Admission of Kentucky Tennessee and Vermont

HIM

Seat of Government Established

CHILDLESS,

Hamilton's Financial Policy.

THAT

Indian troubles in North-west Territory

HIS

National Bank Established

COUNTRY

Genet the French Minister.

MIGHT

Treaties with England Spain and Algiers

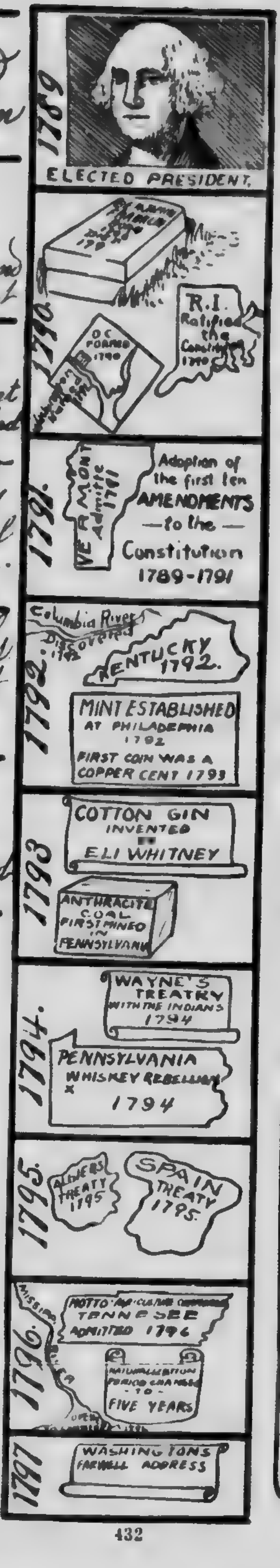
CALL

Orations on the English Treaty.

HIM

New Political Parties.

FATHER"


1789
ELECTED PRESIDENT.
1790.
R.I. Ratified the Constitution 1790
D.C. FORMED 1790
1791.
VERMONT Admitted 1791
Adoption of the first ten AMENDMENTS —to the— Constitution 1789-1791
1792.
Columbia River Discovered 1792
KENTUCKY 1792.
MINT ESTABLISHED AT PHILADEPHIA 1792
FIRST COIN WAS A COPPER CENT 1793
1793
COTTON GIN INVENTED BY ELI WHITNEY
ANTHRACITE COAL FIRST MINED IN PENNSYLVANIA
1794.
WAYNE'S TREATRY WITH THE INDIANS 1794
PENNSYLVANIA WHISKEY REBELLION 1794
1795.
ALGIERS TREATY 1795
SPAIN TREATY 1795.
1796.
MISSISSIPPI
TENNESSEE ADMITTED 1796
NATURALIZATION PERIOD CHANGED -TO- FIVE YEARS
1797
WASHINGTONS FAREWELL ADDRESS

EXECUTIVE DEPARTME

PRESIDENT	WASHINGTON
VICE PRESIDENT	JOHN ADAMS
SECRETARY OF STATE	JEFFERSON RANDOLPH PICKERING
SECRETARY OF TREAS	HAMITON WOLCOTT
SECRETARY OF WAR	KNOX PICKERING MC HENRY
POST MASTER GENERAL	OSGOOD PICKERING HABERSHAM
ATTORNEY GENERAL	RANDOLPH BRATFORD LEE

LEGISLATIVE DEPT

PRESIDENT OF SENATE	ADAMS
SPEAKER OF HOUSE	MUHLENBERG TRUMBULL, DAYTON.
NUMBER OF MEMBERS	SENATE 26 HOUSE 65
LEADERS	MADISON GERRY
LAWS:	REVENUE BILL NATURALIZATION BILL

JUDICIAL-DEPARTMENT

CHIEF JUSTICES	JAY RUTLEGE ELSWORTH
AND ASSOCIATE JUSTICES OF THE SUPREME COURT.	WILSON BLAIR HARRISON IREDEL JOHNSON PATTERSON CHASE

IMPORTANT EVENTS.

TREATIES	TREATY WITH ENGLAND TREATY WITH SPAIN
SLAVERY	
STATES ADMITTED	VERMONT, KENTUCKY + TENNESSEE
DEATHS	PUTNAM, (1790 FRANKLIN (1790) JONE (1792
WARS	INDIAN WHISKEY REBELLION
INVENTIONS	COTTON GIN NAIL CUTTER
MISCELLANEOUS	FIRST U.S CENSUS CAPITOL REMOVED COINAGE OF MONEY
FOREIGN AFFAIRS	FRENCH REVOLUTION

1798. Stamp Tax.
1798. Naturalization Period made fourteen years.
1798. Fries's Rebellion.
1799. Virginia Resolutions.
1799. Death of Washington.
1800. Removal of the Capital.
1800. Second Census: Population, 5,308,483.
1800. Political Parties and Candidates.
(a) Democrat, Thomas Jefferson and Aaron Burr.
(b) Federal, John Adams and Charles C. Pinckney.
Issue, Alien and Sedition Laws.

1801 to 1809.

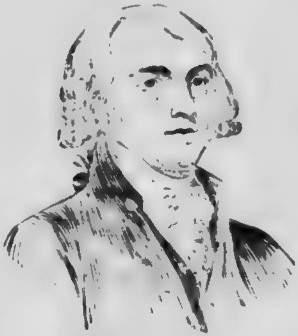
THOMAS JEFFERSON of Virginia, President.
AARON BURR, GEORGE CLINTON of New York, Vice Presidents.
Politics of the Administration (Democrat).

THOMAS JEFFERSON.

1801. Introduction of President's Message.
1801-5. Tripolitan War.
1802. Naturalization Period reduced to five years.
1802. United States Military Academy established at West Point.
1803. Purchase of Louisiana.
1803. Admission of Ohio.
1804. Twelfth Amendment.
1804. Lewis and Clark's Expedition.
1804. Hamilton-Burr Duel.
1806. Orders in Council, } or French
1806. Milan Decree, } and English
1806. Berlin Decree, } blockade.
1806. Pike's Peak.
1807. Burr tried for Treason.
1807. Fulton's Invention.
1807. Embargo Act.
1807. Importation Act.
1807. *Chesapeake* and *Leopard.*
1808. Oregon Country.
Slave Trade Prohibited.
1809. Non-Intercourse Act.
1808. Political Parties and Candidates.
(a) Democrat, James Madison and George Clinton.
(b) Federal, Charles C. Pinckney and Rufus King.
Issues, The War with England and the Embargo Act.

1809 to 1817.

JAMES MADISON of Virginia, President.
GEORGE CLINTON of New York, and ELBRIDGE GERRY of Massachusetts, Vice Presidents.
Politics of the Administration (Democrat).
1809. Macon Bill.
Trade with Great Britain.
Napoleon's Deception.
1810. Third Census: Population, 7,239,881.
1811. Tecumseh's Conspiracy.
1811. Tippecanoe.
1812. Admission of Louisiana.
1812. Causes and Declaration of War of 1812.
1812. Detroit surrendered to the English
1812. *Constitution* and *Guerriere.*
1812. *Wasp* and *Frolic.*
1812. *Hornet* and *Peacock.*
1812. *Chesapeake* and *Shannon.*



JAMES MADISON.

1813. Lake Erie.
1813. Creek War.
1814. Battle of Chippewa.
1814. Lundy's Lane.
1814. Burning of Washington.

1814. **Fort McHenry.**
1814. *The Star Spangled Banner.*
1814. McDonough's Victory.
1814. Hartford Convention.
1814. Treaty of Ghent.
1815. New Orleans Victory.
1816. Admission of Indiana.
1816. Second National Bank chartered.
1816. Political Parties and Candidates.
  (a) Republican, James Monroe and D. D. Tompkins.
  (b) Federal, Rufus King.* (No candidate for vice president.)
  Issue, None distinctly defined.

*The Federalists voted for Rufus King but made no nominations.

1817 to 1825.

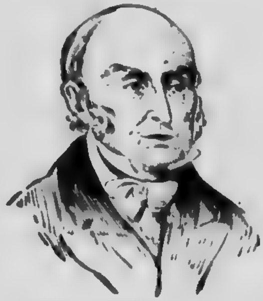
James Monroe of Virginia, President.
D. D. Tompkins of New York, Vice President.
Politics of the Administration (Democrat).

JAMES MONROE.

1817. First Seminole War.
1817. Monroe's Journey North.
1817. Mississippi Admitted.
  Slavery Question in the North and South.
1818. Joint Occupation of Oregon.
1818. Canadian Boundary.
1818. Admission of Illinois.
1819. Purchase of Florida.
1819. Alabama became a State.
1820. Missouri Compromise.
1820. Second Election of Monroe.
  Fourth Census: Population, 9,633,822.
1820. Maine admitted.
1821. Admission of Missouri.
1823. Monroe Doctrine.
  Era of Good Feeling.
  Pension Laws.
1824. Protective Tariff.
1824. Lafayette's visit to the United States.
1824. Political Parties and Candidates.
  (a) Democrat
  (b) National Republican.
  Candidates for President—Andrew Jackson, Henry Clay, John Quincy Adams and W. H. Crawford.
  John C. Calhoun for Vice President.
  Issue, None distinctly defined.

1825 to 1829.

John Quincy Adams of Massachusetts, President.
John C. Calhoun of South Carolina Vice President.
Politics of the Administration (National Republican).
1825. Bunker Hill Monument.
1825. Erie Canal.
1826. American Society for Prom
  of Temperance.
1826. Death of Jefferson and
  (July 4).
1826. William Morgan's Book.
1827. Organization of Anti-Masoni
  Party.
1827. First Railroad.
  Growth of Railroads in United States.
  The Portage Railroad.
1828. Tariff Revision.
1828. Webster's Dictionary.



JOHN QUINCY ADAMS.

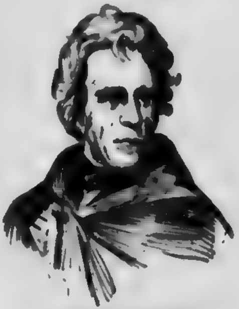
1828. Political Parties and Candida
  (a) Democrat, Andrew Jack
  and John C. Calhoun.
  (b) National Republican,
  Quincy Adams and Rich
  Rush.
  Issues, Tariff and National Bank Questions.

1829 to 1837.

Andrew Jackson of Tennessee, President.

John C. Calhoun of South Carolina,
Martin Van Buren of New York,
Vice Presidents.

Politics of the Administration (Democrat).



ANDREW JACKSON.

1829. Kitchen Cabinet.
Rotation in Office and Political Revolution.
Spoils System established.
1829. Postmaster-General given seat in Cabinet.
1829. Civil Service Changes.
1830. First Mormon Church.
1830. Fifth Census: Population, 12,866,020.
1830. First National Nominating Convention.
1832. First Party Platform.
1832. Webster-Hayne Debate.
W. L. Garrison and *The Liberator*.
1832. Tariff Legislation.
1832. Black Hawk War.
1832. Thomas Benton and United States Bank.
1833. Nullification Act of South Carolina.
1833. Compromise Tariff.
1833. Chicago organized as a Town.
1834. Indian Territory organized.
1835-43. Second Seminole War.
1835. New York Fire.
1836. Washington Fire.
1836. Admission of Arkansas.
1836. Specie Circular.
1836-44. Gag Rule.
1837. Admission of Michigan.
Pocket Vetoes of Jackson.
Pet and Wildcat State Banks.
Speculation Period.

1837. Division of Surplus Revenue.
1836. Political Parties and Candidates.
(a) Democrat, Martin Van Buren and R. M. Johnson.
(b) Whig, William Henry Harrison, and Francis Granger.
Issue, National Bank Question.

A nominating convention was not held [illegible] by the Whig party, but the several states named William Henry Harrison, Daniel Webster and W. P. Mangum as candidates for President, and John Tyler, Francis Granger, and John McLean as candidates for Vice President.

1837 to 1841.

Martin Van Buren of New York, President.

Richard M. Johnson of Kentucky, Vice President.

Politics of the Administration (Democrat).

1837. Financial Panic and its Causes.
Canadian Rebellion.
Magnetic Telegraph patented.
Steamer *Caroline*.
1839. Washingtonian Society organized.
1840. Organization of Liberty Party.
1840. Sixth Census: Population, 17,069,453.

MARTIN VAN BUREN.

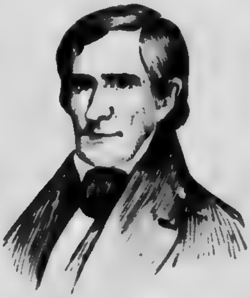
1830-47. Mormon Discussion.
1840. Sub-Treasury Bill.
Location of Chief Treasury.
Locations of Sub-Treasuries.
Antislavery Movements.
1840. Political Parties and Candidates.
(a) Whig, William Henry Harrison and John Tyler.
(b) Democrat, Martin Van Buren and R. M. Johnson.
(c) Liberty, J. G. Birney and Francis Lemoyne.
Issues, Protective Tariff and National Bank.

1841 to 1845.

William H. Harrison of Ohio, President (One month).

John Tyler of Virginia, Vice President.

Politics of the Administration (Whig).



WILLIAM H. HARRISON.

1840-1850. Immigrants to United States.
1840. Whig Party Doctrine.
1840. Democratic Party Doctrine.
1841. Death of Harrison.
Tyler's Veto of the National Bank Bill.
1842. Dorr's Rebellion.
1842. Webster-Ashburton Treaty.
Tyler and the Whig Congress.
Resignation of the Cabinet.
1843. Dedication of Bunker Hill Monument.

JOHN TYLER.

1844. Electric Telegraph.
1844. First Message by Telegraph.
1844. First Treaty with China.
1845. Antirent Riots in New York.
1845. Annexation of Texas.
1845. Admission of Texas.
Bankrupt Law.
Florida Admitted.

1844. Political Parties and Candidates.
(a) Democrat, James K. Polk and George M. Dallas.
(b) Whig, Henry Clay and Theodore Frelinghuysen.
(c) Liberty, James G. Birney and Thomas Morris.
Issue, Annexation of Texas.

1845 to 1849.

James K. Polk of Tennessee, President.

George M. Dallas of Pennsylvania, Vice President.

Politics of the Administration (Democrat).

1845. Oregon Question.
Marcus Whitman.
Fifty-four Forty or Fight.
Settlement of Northwestern Boundary of United States.

JAMES K. POLK.

1846-48. Mexican War.
1846. Wilmot Proviso.
1846. Admission of Iowa.
1846. Suspension Bridge.
1846. Sewing Machine.
1846. Bear State Republic.
1846. Great American Desert.
1846. The Virginia Portion of District of Columbia receded to Virginia.
1846. Independent Treasury Bill.
1846. Hoe's Printing Press.
1848. Discovery of Gold in California.
1848. Free Soil party.
1848. Admission of Wisconsin.
1849. Department of Interior created (March 3).
Salt Lake City founded.

1848. Political Parties and Candidates.
- (a) Whig, Zachary Taylor and Millard Fillmore.
- (b) Democrat, Lewis Cass and W. O. Butler.
- (c) Free Soil, Martin Van Buren and Charles Francis Adams.

Issue, Slavery was the leading issue, but the Whigs and Democrats made no particular issue.

MEXICAN WAR, 1846 to 1848.

Causes—
- (a) Real (Annexation of Texas).
- (b) Immediate (The boundary line between Texas and Mexico).

Generals in Chief—
- (a) American { Zachary Taylor
  Winfield Scott.
- (b) Mexican—Santa Anna.

Declaration of War by United States (May 13, 1846).
Declaration of War by Mexico (May 23, 1846).
1846. Palo Alto (May 8).
1846. Resaca de la Palma (May 9).
1846. Monterey (Sept. 24).
1847. Buena Vista (Feb. 23).
1847. Vera Cruz (Mar. 27).
1847. Cerro Gordo (April 18).
1847. Pueblo (May 15).
1847. City of Mexico (Sept. 14).
1848. Guadalupe Hidalgo (Feb. 2).
1848. Political Parties and Candidates.
- (a) Whig, Zachary Taylor and Millard Fillmore.
- (b) Democrat, Lewis Cass and William O. Butler.
- (c) Free Soil, Martin Van Buren and Charles Francis Adams.

Issue, Slavery Question, but the Whigs and Democrats did not declare themselves positively upon it.

1849 to 1853.

ZACHARY TAYLOR of Louisiana, President (Sixteen months).
MILLARD FILLMORE of New York, Vice President.
Politics of the Administration (Whig).
1850. Extension of Slavery.
1850. Death of the President.
1850. Omnibus Bill.
1850. Seventh Census: Population, 23,191,876.

ZACHARY TAYLOR.

1850. Admission of California.
1850. Fugitive Slave Law.
1850. Squatter Sovereignty.
1850. Personal Liberty Laws.
1850. Importation of Slaves in District of Columbia.
Underground Railroad.

MILLARD FILLMORE.

1851. Maine Law passed.
1851. Filibusters.
1852. Death of Clay and Webster.
1852. Uncle Tom's Cabin.
1852. Political Parties and Candidates.
- (a) Democrat, Franklin Pierce and W. R. King.
- (b) Whig, Winfield Scott and W. A. Graham.
- (c) Free Soil, J. P. Hale and G. W. Julian.

Issue, No special issue; for both the Democrat and the Whig parties considered the Slavery question settled since 1850.

1853 to 1857.

Franklin Pierce of New Hampshire, President.

William R. King of Alabama, Vice President.

Politics of the Administration (Democrat).

FRANKLIN PIERCE.

1853. World's Fair in New York City.
1853. Crystal Palace.
1853. Gadsden Purchase.
1853. Death of the Vice President.
1853. Union Pacific Railroad.
1853. Know-Nothing or American Party.
1854. Perry's Treaty with Japan.
1854. Kansas-Nebraska Bill.
1854. Ostend Manifesto.
1854-61. Civil War in Kansas.
Border Ruffians, Abolitionists, Black Republicans.
1856. Organization of Republican Party.
1856. Brooks Assaults Sumner.
1856. Silver Grays.
1856. Political Parties and Candidates.
  (a) Democrat. James Buchanan and J. C. Breckinridge.
  (b) Republican. John C. Frémont and W. L. Dayton.
  (c) Know-Nothing,* Millard Fillmore and A. J. Donelson.
  Issue, Extension of Slavery.

1857 to 1861.

James Buchanan of Pennsylvania, President.

J. C. Breckinridge of Kentucky, Vice President.

Politics of the Administration (Democrat).

1857. Dred Scott Decision.
1857. Panic in Business.
1857-58. Lecompton Constitution.
1858. Discovery of Silver.
1858. Lincoln-Douglas Debates.
1858. The Atlantic Cable.
1858. Admission of Minnesota.
1859. John Brown's Raid.
1859. Oregon Admitted.
1859. Petroleum Well.
1860. South Carolina secedes.
1860. Split in Democrat Party.
1860. National Constitutional Union Party.
1860. Bell and Everett Party.
1860. Eighth Census: Population, 31, 443,521.
1861. Peace Convention.
1861. Confederate States of America.
1861. Star of the West.
1861. Kansas Admitted.

JAMES BUCHANAN.

1861. The Stars and Bars.
1860. Political Parties and Candidates
  (a) Republican, Abraham Lincoln and Hannibal Hamlin.
  (b) Northern Democrats, St phen A. Douglas and Hersch l V. Johnson.
  (c) Southern Democrats, Jol C. Breckinridge and Jo Lane.
  (d) Constitutional Union, Jol Bell and Edward Everett.
  Issue, (Republican, Non-ext sion of slavery in the terri ries). (Northern Democra Popular Sovereignty). (South ern Democrats, Extension Slavery). (Constitutio Union. The Laws and the Union).

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*In 1856 the Whigs ratified the nominations of the Know-Nothing Party.

1861 to 1865.

Abraham Lincoln, of Illinois, President.

Hannibal Hamlin, of Maine, Vice President.

Politics of the Administration (Republican).

ABRAHAM LINCOLN.

1861-65. Civil War.
1861. Death of Stephen A. Douglas.
1861. Organization of the Bureau of Agriculture.
Proposed Thirteenth Amendment.
1862. Homestead Act.
1862. Slavery prohibited in the Territories and abolished in the District of Columbia.
1862. First Issue of Greenbacks.
1863. Founding of National Banks.
1863. Admission of West Virginia.
1864. Nevada Admitted.
1864. Political Parties and Candidates.
  (a) (Radical) Republican, John C. Frémont and John Cochrane.
  (b) Democrat, George B. McClellan and George H. Pendleton.
  (c) (Regular) Republican, Abraham Lincoln and Andrew Johnson.

The above nominations were made, but by September Frémont and Cochrane withdrew, and Abraham Lincoln and Andrew Johnson were elected by the Republican Party.

Causes of the Civil War.

I. Remote—
  (a) Slavery.
  (b) State Rights.
  (c) Want of Intercourse between North and South.
  (d) Increase of Territory.
  (e) Different Systems of Labor in North and South.
  (f) Different Construction of the Constitution.
  (g) Publication of Sectional Books.
II. Immediate—
  (a) Secession of the States.

Influences that Led to the Civil War.

1793. Invention of the Cotton Gin.
1820. Missouri Compromise.
1832. Nullification Act of South Carolina.
1832. Antislavery Society.
1845. Annexation of Texas.
1850. Fugitive Slave Law.
1850. Personal Liberty Laws.
1854. Kansas-Nebraska Bill.
1857. Dred Scott Decision.
1859. John Brown's Raid.
Protective Tariff Law.
Antislavery Parties:
  (a) Liberty (b) Free Soil (c) Republican.

Civil War.

Generals in chief:
  (1) Union—
    (a) Winfield Scott.
    (b) H. W. Halleck.
    (c) George B. McClellan.
    (d) U. S. Grant (Lieutenant General).
  (2) Confederate—
    (a) Robert E. Lee.

Events of 1861.

April 12, Fort Sumter.
April 15, Call for Troops.
April 19, Baltimore Riot.
Contrabands.
General condition of the North and South.
Nov. 1, Commander in chief.
Strength of the armies in the North and South.
April 19, Southern Ports Blockaded.
July 2, Battle of Bull Run or Manassas.
Nov. 8, Trent Affair.
Union Plan of the War.

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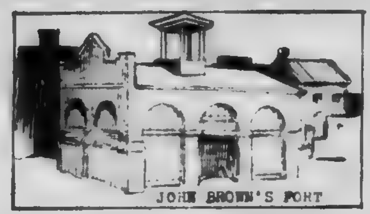
1860 **S**ECESSION

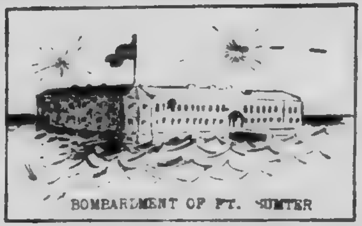
OF SOUTH CAROLINA

Dec. 20, SOUTH CAROLINA
April 23, Douglas Nominated
May 9, Bell Nominated
May 18, Lincoln Nominated
Sept 12, The Fillibusters


JOHN BROWN'S FORT

1861 **L**INCOLN INAUGURATED

April 13, Fall of Sumter (C)
June 10, Big Bethel (C)
July 21, Bull Run Battle (C)
Sept 10, Carnifex Ferry (U)
Oct. 3, Green Briar (U)
Oct. 21, Ball's Bluff (C)
Nov 7, Belmont (C)
Dec. 20, Drainsville (U)


BOMBARDMENT OF FT. SUMTER

1862 **A**NTIETAM

Sept 16-17, BATTLE OF (U)
Feb. 16, Fort Donaldson (U)
Mch 6-8, Pea Ridge (U)
Mch. 9, Naval Battle (U)
Apr. 6-7, Shiloh (U)
June 26, Mechanicsville (C)
Aug. 8, Cedar Mountain (C)
Dec 13, Fredericksburg (C)

BLOODY LANE - Antietam

1863 **V**ICKSBURG

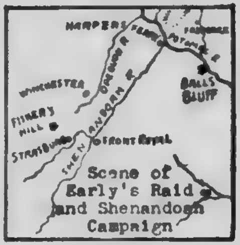
July 4, SURRENDERS (U)
Jan 2, Murfreesboro (U)
May 1-5, Chancellorsville (C)
July 1-3, [illegible] (U)
July 9, [illegible] (U)
Sept 19-20, [illegible] (C)
Nov. 24-25, Lookout Mountain (U)

1864

EARLY'S RAID

May 5-6, Wilderness (I)
May 8-18, Spottsylvania (I)
June 3, Cold Harbor (C)
June 19, Naval Battle (U)
Oct 29, Sheridan's Ride (U)
Dec 16, Nashville (U)
Dec. 21, Savannah Taken (U)

SHERIDAN'S RIDE

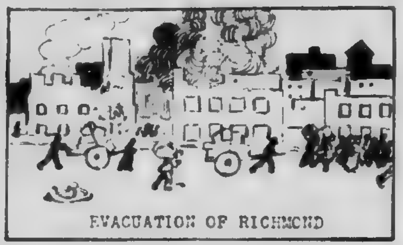


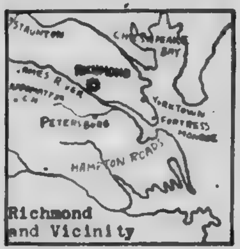
Scene of Early's Raid and Shenandoah Campaign

1865

RICHMOND TAKEN

Feb. 18, Charleston Captured (U)
Feb. 21, Wilmington (U)
Apr. 9, Lee Surrenders (U)
Apr. 26, Johnson Surrenders (U)
May 11, Pres. Davis Captured (U)
Dec. 18, Thirteenth Amendment.


EVACUATION OF RICHMOND



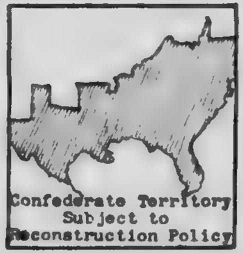
Richmond and Vicinity

1866–1876

YEARS OF RECONSTRUCTION

1868, Johnson Impeached.
1868, Amnesty Proclamation.
1868, Fourteenth Amendment.
1870, Fifteenth Amendment.
1871, The Ku-Klux-Klan

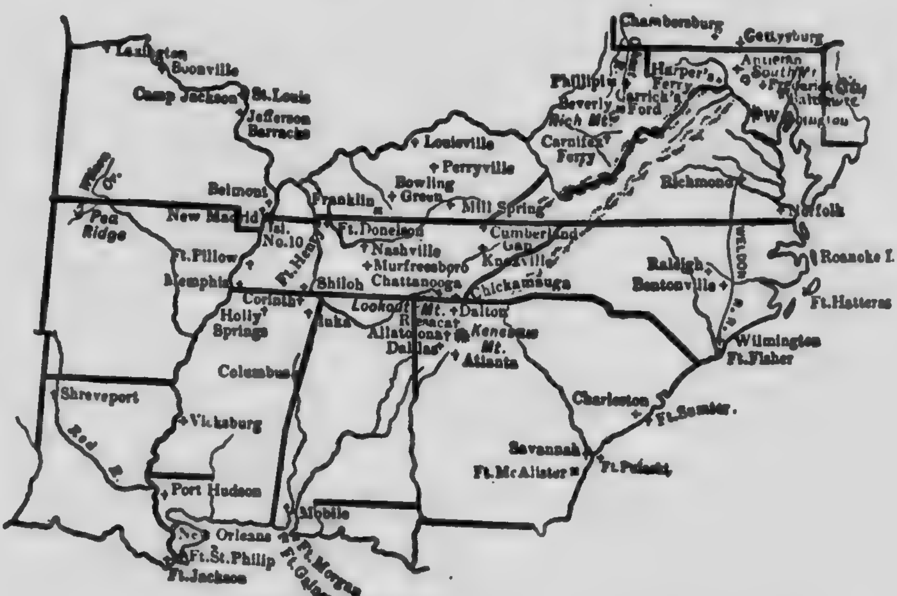
THE KU-KLUX-KLAN


Confederate Territory Subject to Reconstruction Policy

SLAVERY, the key word to study the events of the Civil War, will help the diligent student in his work of reference. It will remind him of many historical facts and dates from the Secession of South Carolina, in 1860, to the end of the Reconstruction, in 1876. Although slavery was only an indirect cause of this war, it serves as a reminder of many events and dates which are of importance to the student of history.

EVENTS OF 1862.

Feb. 6, Fort Henry.
Feb. 14 to 16, Fort Donelson.
Mar. 9, *Merrimac* and *Monitor.*
April 6 and 7, Battle of Shiloh or Pittsburg Landing.
April 7, Island No. 10.
April 25, Capture of New Orleans.
Peninsular Campaign.
June 25 to July 1, Seven Days' Battle.
Sept. 17, Battle of Antietam or Sharpsburg.
Sept. 14, Battle of South Mountain.
Dec. 13, Battle of Fredericksburg.
Dec. 31, Battle of Murfreesboro.
Lee's Invasion of Maryland.



PRINCIPAL SCENES OF THE CIVIL WAR.

EVENTS OF 1863.

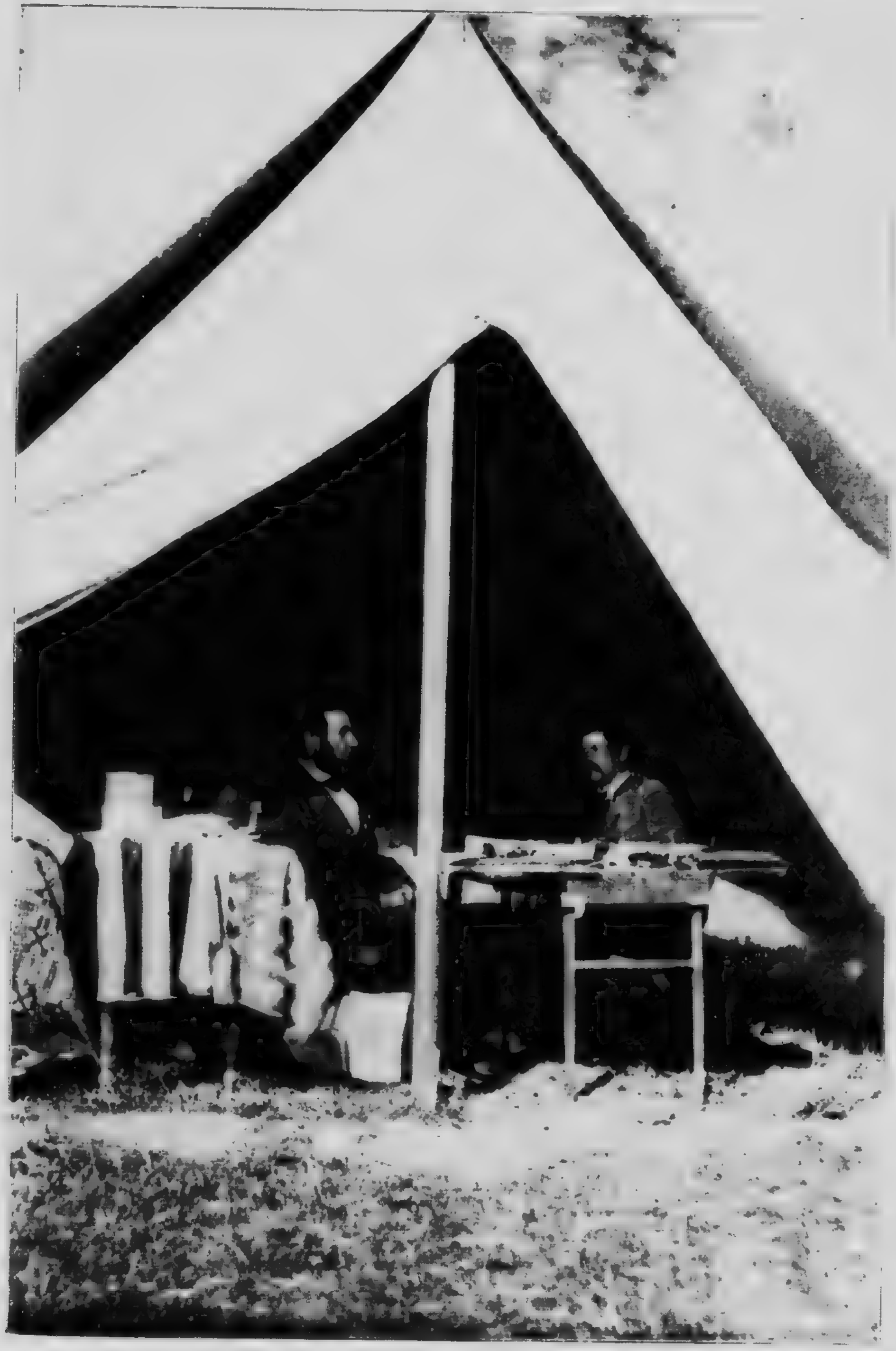
Jan. 1, Emancipation Proclamation.
Lee's Second Invasion of the North.
May 2 and 3, Battle of Chancellorsville.
July 1, 2, and 3, Battle of Gettysburg.
Opening of the Mississippi.
July 4, Surrender of Vicksburg.
July 9, Surrender of Port Hudson.
July, Draft Riots.
July, Morgan's Raid.
Siege of Charleston.
Sept. 19 and 20, Battle of Chickamauga.
Nov. 23 to 25, Siege of Chattanooga.

EVENTS OF 1864.

Red River Expedition.
March 3, Grant and the Union Armies.
May 5 and 6, Battle of the Wilderness.
May 9, Sheridan's Raid on Richmond.
May 9 and 10, Battle of Spottsylvania Court House.
May 15 to July 18, Sherman's Advance to Atlanta.
June 3, Battle of Cold Harbor.
June 19, *Kearsarge* and *Alabama.*
July 30, Explosion of Petersburg Mine.
Aug. 5, Blockade of Mobile.
Aug. 18, Capture of Weldon Railroad.
Nov. 16 to Dec. 26, Sherman's March to the Sea.
Dec. 16, Battle of Nashville.

EVENTS OF 1865.

April 2, Petersburg Surrendered.
April 3, Surrender of Richmond.
April 9, Lee Surrendered.
April 14, Assassination of Lincoln.
April 26, Johnston Surrendered.
May 10, Capture of Jefferson Davis.



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RESIDENT LINCOLN VISITING THE HEADQUARTERS OF GENERAL McCLELLAN, OCT. 3, 1862, AFTER THE BATTLE OF ANTIETAM, THE LAST BATTLE OF GENERAL McCLELLAN.

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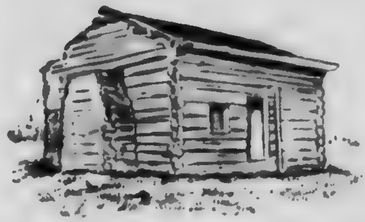


BIRTHPLACE OF ABRAHAM LINCOLN

ARLINGTON HOUSE, THE HOME OF GENERAL LEE

LINCOLN SPEAKING IN THE STATE CONVENTION

ADMIRAL FARRAGUT AT MOBILE

LEE'S ARMY ON THE MARCH TO INVADE MARYLAND

BREASTWORK OF COTTON

A SLAVE-CHAIN

LIBBY PRISON, RICHMOND, VA.

SCENES FROM THE CIVIL WAR OF NORTH AMERICA.

War Prisons.
Henry Wirz.
Cost of the War.
  (a) In lives (about 700,000 men).
  (b) In money (increased national debt to $2,750,000,000).
  (c) In property and business (cannot be estimated).
Leading Results—
  (a) Freed the Slaves.
  (b) Preserved the Union.

1865 to 1869.

Abraham Lincoln of Illinois, President. (Forty-four days.)
Andrew Johnson of Tennessee, Vice President.
Politics of the Administration (Republican).

ANDREW JOHNSON.

1865. Reconstruction Policy of Johnson.
1865. Reconstruction Policy of Congress.
1865. Amnesty Proclamation.
1865. XIII. Amendment.
1865. Disbanding of the Army.
1866. Freedmen's Bureau and Civil Rights Bill.
1866. The Atlantic Cable.
1866. The Peabody Fund.
1867. Stanton Removed from Office.
1867. Purchase of Alaska.
1867. Maximilian in Mexico.
1867. Bureau of Education Established.
1867. Tenure of Office Act.
1867. Admission of Nebraska.
1868. Burlingame Treaty.
1868. Impeachment of Johnson.
1868. Organization of Ku-Klux Klan.
1868. Greenback Party.
1868. XIV. Amendment.
1869. XV. Amendment.
1868. Political Parties and Candidate.
  (a) Republican, U. S. Grant an Schuyler Colfax.
  (b) Democrat, Horatio Seymou and F. P. Blair.
  Issue, Rights of Seceded States and Negro Suffrage.

1869 to 1877.

Ulysses S. Grant of Illinois, President.
Schuyler Colfax of Indiana, and Henry Wilson of Massachusetts, Vice Presidents.
Politics of the Administration (Republican).
1869. Union Pacific Railroad.
1870. Weather Bureau.
1870. Fenian Invasion of Canada.
1870. Ninth Census: Population, 38,558,371.
1871. Joint High Commission.
1871. Treaty of Washington.
1871. Alabama Claims.
1871. Geneva Arbitration.
1871. Force Bill.
1871. Chicago Fire.
1872. Modoc War.
1872. Liberal Republicans.
1872. Boston Fire.
1872. Crédit Mobilier.
1873. Panic of 1873.
1873. Salary Act or Salary Grab.

ULYSSES S. GRANT.

1873. Demonetization of Silver.
1874. Inflation Bill.
1874. Whiskey Ring.
1875. Resumption Act.

1876. General Custer in the Sioux War.
1876. Centennial Exposition at Philadelphia.
1876. Loan Office Certificates.
1876. Admission of Colorado.
1877. Telephone and Phonograph.
1877. Joint Electoral Commission.
1876. Political Parties and Candidates.
- (a) Republican, R. B. Hayes and W. A. Wheeler.
- (b) Democrat, S. J. Tilden and T. A. Hendricks.
- (c) Greenback, Peter Cooper and S. F. Carey.
- (d) Prohibition, J. C. Smith and R. G. Stewart.
- Issue, Resumption of Specie Payment.

1877 to 1881.

Rutherford B. Hayes of Ohio, President.

William A. Wheeler of New York, Vice President.

Politics of the Administration (Republican).

RUTHERFORD B. HAYES.

1877. Withdrawal of Troops in the South.
1877. Railroad Strikes.
1877. Halifax Award.
1877. Bland Silver Bill.
1875-81. Captain Eads.
1878. Bland-Allison Bill.
1878. Silver Remonetized.
1878. Yellow Fever in the South.
1879. Life-Saving Service Established.
1879. Negro Exodus.
1879. Resumption of Specie Payment.
1880. Treaties with China.
1880. Tenth Census: Population, 50,155,783.
1880. Political Parties and Candidates.
- (a) Republican, James A. Garfield and Chester A. Arthur.
- (b) Democrat, Winfield S. Hancock and William H. English.
- (c) Greenback, J. B. Weaver and E. J. Chambers.
- (d) Prohibition, Neal Dow and H. A. Thompson.
- Issue, Protective Tariff was the leading issue.

1881 to 1885.

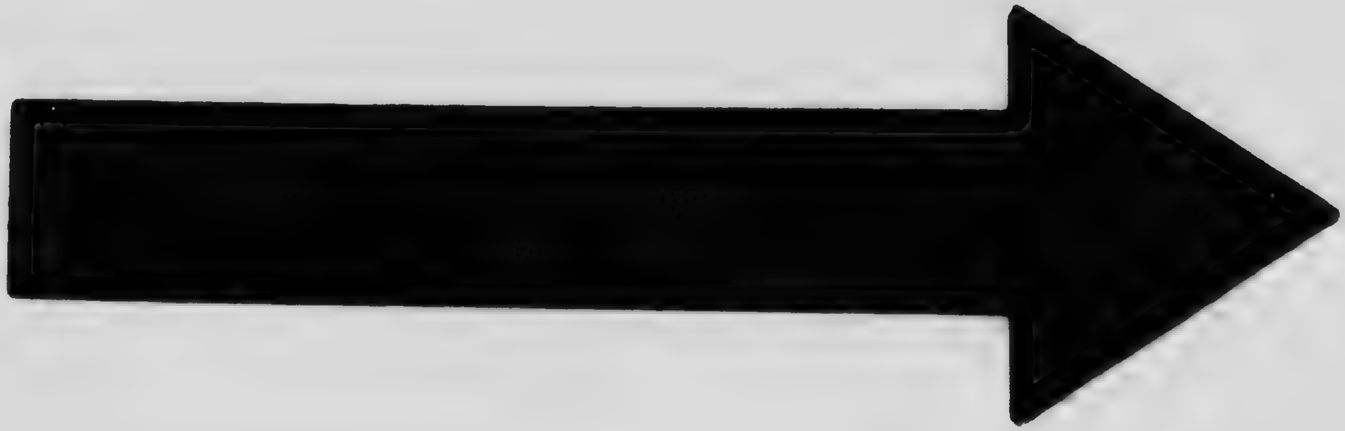
James A. Garfield of Ohio, President. (7 months, 14 days.)

Chester A. Arthur of New York, Vice President.

Politics of the Administration (Republican).

JAMES A. GARFIELD.

1881. Star Route Frauds.
1881. Assassination of Garfield.
1881. Centennial at Yorktown, Va.
1882. Overflow of the Mississippi River.
1882. Trial and Execution of Guiteau.
1882. Edmunds Anti-Polygamy Bill.
1882. Red Cross Society.
1883. Completion of the Brooklyn Bridge.
1883. Civil Service Bill.
1883. Adoption of Standard Time.
1883-5. Reduction of Letter Postage.
1884. Anti-Chinese Bill.
1884. Cotton Centennial Exhibition.
1884. Anti-Monopoly and Labor Parties.
1885. Washington Monument.
1884. Political Parties and Candidates.
- (a) Republican, James G. Blaine and John A. Logan.



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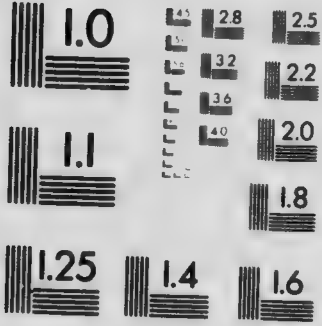

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(b) Democrat, Grover Cleveland and Thomas A. Hendricks.
(c) Prohibition, J. P. St. John and William Daniel.
(d) Greenback Labor, Benjamin F. Butler and A. M. West.
(e) American Prohibition National, S. C. Pomeroy and J. A. Conant.

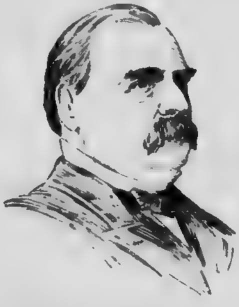
CHESTER A. ARTHUR.

(f) Anti-Monopoly, Benjamin F. Butler and A. M. West.
(g) Equal Rights, Belva A. Lockwood and M. L. Stow.

Issue, Republicans for protection, the Democrats for revenue tariff.

1885 to 1889.

Grover Cleveland of New York, President.
Thomas A. Hendricks of Indiana, Vice President.
(8 months, 21 days.)
Politics of the Administration (Democrat).



GROVER CLEVELAND.

1885. Death of the Vice President.
1885. Civil Service Reform.
1885. Anti-Contract-Labor Law.
1886. Chicago Anarchists.
1886. Presidential Succession Law.
1886. Charleston Earthquake.
1886. Statue of Liberty.
1887. Inter-State Commerce Act.
1887. Electoral Count Act.
1888. Chinese Exclusion Act.
1888. Department of Labor.
1888. Mills Tariff Bill.
1888. Department of Agriculture.
1888. Political Parties and Candidates.
(a) Republican, Benjamin Harrison and Levi P. Morton.
(b) Democrat, Grover Cleveland and Allen G. Thurman.
(c) Prohibition, C. B. Fisk and J. A. Brooks.
(d) Union Labor, A. J. Streeter and C. E. Cunningham.
(e) United Labor, R. H. Cowdrey and W. H. T. Wakefield.
(f) Equal Rights, Belva A. Lockwood and A. H. Love.

Issue, Tariff was the leading issue between the leading parties.

1889 to 1893.

Benjamin Harrison of Indiana, President.
Levi P. Morton of New York, Vice President.
Politics of the Administration (Republican).

BENJAMIN HARRISON.

1889. Oklahoma Opened.
1889. Australian Ballot System.
1889. Farmers' Alliance and Industrial Union.
1889. Pan-American Congress.
1889. Johnstown Flood.

1889. Washington Centennial.
1889. New States:
- 1. North Dakota.
- 2. South Dakota.
- 3. Montana.
- 4. Washington.

1889. New War Ships.
1889. International Maritime Council.
1890. Admission of Idaho and Wyoming.
1890. Anti-Trust Act.
1890. Sherman Silver Purchase.
1890. McKinley Tariff Bill.
1890. New Pension Act.
1890. Eleventh Census: Population, 62,622,250.
1890. Land Mortgage Scheme.
1891. People's Party Organized.
1892. Homestead Strikes.
1892. Dedication of World's Fair Buildings.
Woman Suffrage.
1892. Political Parties and Candidates.
(a) Democrat, Grover Cleveland and Adlai E. Stevenson.
(b) Republican, Benjamin Harrison and Whitelaw Reid.
(c) People's, J. B. Weaver and J. G. Field.
(d) Prohibition, John Bidwell and J. B. Cranfield.
(e) Socialist Labor, Simon Wingand, C. H. Matchett.
Issue, Tariff, between the Democrat and Republican Parties.

1893 to 1897.

GROVER CLEVELAND of New York, President.
ADLAI E. STEVENSON of Illinois, Vice President.
Politics of the Administration (Democrat).

1893. Special Session of Congress.
'93. Panic in Business.
1893. Bering Sea Commission.
1893. Gold Reserve.
1893. Columbian Exposition.
1893. Repeal of Sherman Silver Act.
1894. Repeal of the Force Act.
1894. Coxey's Commonweal Army.
1894. Pullman Strike.
1894. Hawaiian Question.
1894. Wilson Bill.
1895. Venezuelan Boundary Question
1895. Cuban Revolt.
1895. Bond Issues.
1896. Admission of Utah.
1896. Arbitration Treaty at Washington.
1896. Political Parties and Candidates.
(a) Republican, William McKinley and Garret A. Hobart.
(b) Democrat, William J. Bryan and Arthur Sewall.
(c) National Democrat, J. M. Palmer and S. B. Buckner.
(d) Silver Party, W. J. Bryan and Arthur Sewall.
(e) Populists, W. J. Bryan and Thomas Watson.
(f) Prohibition, Joshua Levering and Hal Johnson.
(g) National Party, C. E. Bentley and J. H. Southgate.
(h) Socialist Labor, C. H. Matchett and M. Maguire.
Issues, High protective tariff and free coinage of silver and gold.

1897 to 1901.

WILLIAM MCKINLEY of Ohio, President.
GARRET A. HOBART of New Jersey, Vice President.
Politics of the Administration (Republican).

WILLIAM McKINLEY.

1897. McKinley's Inaugural Address.
1897. Dingley Tariff Bill.
1897. Cuban Question.
1897. Congressional Library Building.
1898. Increase of Exports.
1898. Greater New York.
1898. The *Maine* Destroyed.
1898. Naval Court of Inquiry.
1898. President McKinley's Special Message to Congress.
1898. United States Declared War against Spain.

1898. Battle of Manila.
1898. Destruction of Cervera's Fleet.
1898. Capture of Santiago.
1898. War Bonds and War Taxes.
1898. Treaty of Peace.
1898. Trans-Mississippi Exposition.
1899. Wireless Telegraphy.
1900. Galveston Disaster.
1900. Twelfth Census: Population, 76,303,387.
1900. Total Cost of the War with Spain.
1900. Political Parties and Candidates.
    (a) Republican, William McKinley and Theodore Roosevelt.
    (b) Democrat, William J. Bryan and Adlai E. Stevenson.
    (c) Peoples, William J. Bryan and Adlai E. Stevenson.
    (d) Peoples (Middle-of-the Road), Wharton Barker and Ignatius Donnelly.
    (e) Silver Republican, William J. Bryan and Adlai Stevenson.
    (f) Prohibition, John G. Woolley and H. B. Metcalf.
    (g) Socialist Labor, J. F. Malloney and Valentine Rennel.
Issue, Free silver, protective tariff, and expansion were the leading issues.

War with Spain. 1898.

Causes—
    (a) Remote (Cuban Question).
    (b) Immediate (Destruction of the *Maine*).
April 25. United States declares War. 2699.
April 27. Batteries at Matanzas destroyed.
April 30. Dewey's Victory at Manila.
May 12. Admiral Sampson's Fleet at San Juan.
June 3. Hobson Sinks the *Merrimac*.
June 24. Rough Riders attacked.
July 2. Battle of El Caney.
July 3. Admiral Cevera's Fleet Captured.
July 17. General Toral surrendered Santiago.
July 29. General Miles captured Ponce.
August 7. Manila captured.
August 12. Protocol signed at Washington.
Dec. 10. Treaty of Peace signed at Paris.

1901 to 1905.

William McKinley of Ohio, President. (6 mo., 10 da.).
Theodore Roosevelt of New York Vice President.
Politics of the Administration (Republican).

THEODORE ROOSEVELT.

1901. Assassination of William McKinley.
1901. Roosevelt becomes President.
1901. Clayton-Bulwer Treaty.
1901. Death of Hay-Pauncefote Treat
1901. Death of Queen Victoria.
1901. Death of Ex-President Harris
1901. Death of William M. Evarts.
1901. Capture of Aguinaldo.
1901. Schley Court of Inquiry.
1901. Pan-American Congress.
1901. Schley-Sampson controversy. 2551.
1901. Pan-American Exposition, Buffalo, N. Y.
1901. First Official Act of President Roosevelt.
1901-1902 Steel and Railroad Combinations.
1902. Visit of Prince Henry of Prus to the United States.
1902. Anthracite Coal Strike.
1903. Iroquois Theater (Chicago) fi
1903. Panama Canal purchased.
1904. Louisiana Purchase Expositi
1904. Political Parties and Candida
    (a) Democrat, Alton B. Parl and Henry G. Davis.
    (b) Republican, Theo. Ro velt and Charles W. Fairbar
    (c) Prohibition, Silas C. Sw low and George W. Carroll
    (d) Socialist, Eugene V. D and Benjamin Hanford.

(e) Peoples, Thomas E. Watson and Thomas A. Tibbles.
(f) Social Labor, Charles H. Corrigan and William W. Cox.
(g) Continental, Austin Holcomb and A. King.

Issue, Annexation of 'noncontiguous territory without the Consent of the People who reside within its Boundaries.

1905 to 1909.

THEODORE ROOSEVELT of New York, President.

CHARLES WARREN FAIRBANKS of Indiana, Vice President.

Politics of the Administration (Republican).

1905. Lewis and Clark Exposition, Portland, Ore.

1905. Treaty of Portsmouth signed at Portsmouth, N. H.

1906. Earthquake in California.

1907. Death of Richard Mansfield.

1907. Panic in business.

1907. Jamestown Exposition, Norfolk, Va.

1907. War scare with Japan.

1907. Admission of Oklahoma.

1908. Death of Grover Cleveland.

1908. Frederick A. Cook announced the Discovery of the North Pole.

1908. Political Parties and Candidates.
(a) Republican, William H. Taft and James S. Sherman.
(b) Democrat, William J. Bryan and John W. Kern.
(c) Prohibition, Eugene W. Chafin and Aaron S. Watkins.
(d) Socialist, Eugene V. Debs and Benjamin Hanford.
(e) Independence, Thomas L. Hisgen and John T. Graves
(f) Social Labor, August Gilhaus and Donald Munro.
(g) Peoples, Thomas E. Watson and Samuel W. Williams.
(h) United Christian, David B. Turney.

Issues, Revision of the Tariff and Regulation of the Trusts.

1909. General enactment of Primary Election Laws in the states, requiring that Candidates for Office be nominated at Primary Elections.

1909 to 1913.

WILLIAM HOWARD TAFT of Ohio, President.

JAMES SCHOOLCRAFT SHERMAN of New York, Vice President.

Politics of the Administration (Republican).

WILLIAM HOWARD TAFT.

1909. Robert E. Peary reached the North Pole.

1909. Roosevelt's Hunting Tour to Africa.

1909. Large Emigration to Canada.

1909. Alaska-Yukon Exposition at Seattle.

1910. Thirteenth Census: Population, 91,641,197.

1910. Total Population, including Insular Possessions, 101,098,586.

1910. Extensive Election Frauds in Indiana.

1910. Flying Machine.

1911. Postal Savings Banks established.

1911. Panama Canal Exposition located at San Francisco (in 1915).

1911. Reciprocity in Trade proposed between Canada and the United States.

1911. Troops sent to the Mexican border to protect American interests during the revolution in Mexico.

1912. New States { New Mexico.
Arizona.

1912. Progressive Party Organized

1912. Political Parties and Candidates.
- (a) Democrat, Woodrow Wilson and Thomas Riley Marshall.
- (b) Progressive, Theodore Roosevelt and Hiram W. Johnson.
- (c) Republican, William Howard Taft and James S. Sherman.
- (d) Socialist, Eugene V. Debs and Emil Seidel.
- (e) Prohibition, Eugene W. Chafin and Aaron S. Watkins.
- (f) Socialist Labor, Arthur Reimer and August Gillhaus.

Issues, Tariff Revision, Civil Service Reform, Banking Legislation, and Rule of the People.

1912. Vice President James Schoolcraft Sherman died, Oct. 30.

1913. Parcel Post Law went into effect Jan. 1.

1913. Ratification of the Sixteenth Amendment to the United States Constitution, which authorizes Taxes on Incomes.

1913 to ——.

Woodrow Wilson of New Jersey, President.

Thomas Riley Marshall of Indiana, Vice President.

Politics of the Administration (Democrat).

1913. Great Floods in the valley of the Ohio and the Mississippi.

WOODROW WILSON.

1913. Ratification of the change in the Constitution which requires that United States Senators shall be elected by direct vote.

1913. Recognition of the Republic of China.

1913. Underwood Tariff Bill, revising the tariff downward and enacting the Income Tax Law.

1914. Great European War began on August 2.

1915. Panama-Pacific Exposition at San Francisco, Cal.

Civics and the Citizen

Definitions and Principles.

I. Society.

Society is an organization of men in human relations.

The Evolution of Society.

1. Nomadic State.
2. Herdsmen.
3. Husbandmen.—Agriculture,
4. Manufacturers,
5. Traders.—Commerce.

> To the people we come sooner or later; it is upon their wisdom and self-restraint that the most cunningly devised scheme of government will in the last resort depend.—*Bryce.*

THEORIES OF THE ORIGIN OF SOCIETY.

1. Historical.

   Man cannot exist in solitude; the union of the sexes is necessary for the perpetuation of the race. Families coming together form a village or tribe, and a union of tribes, or the expansion of a single tribe, forms the state. Thus, the family is the first step, the tribe is the second step, and the state the last step in social development. The state differs from the family and the tribe, therefore, in the number of its members, and in the number and nature of their relations — *Aristotle.*

2. The Contract or Compact Theory.

   This theory, best expounded by Rousseau, maintains that men lived at one time in a free natural condition, every one doing as he pleased. But living in this way, in the long run, they suffered the want of those advantages that spring from society and government. Hence they agreed or contracted to enter into society and to establish a government.

3. The Theological Theory.

   This theory maintains that the state is the immediate workmanship of God, and that government is an ordinance of God.

QUESTIONS.

1. Which theory may be termed the Social Theory? Natural Theory? Organic Theory? 2. Can one of the above theories be made to include the other two? Give the argument. 3. Which theory adopts evolution? 4. What is the meaning of Aristotle's dictum: "Man is born a citizen"? 5. Give two objections to the Compact Theory. 6. In what ways do Rousseau's religious and political views contradict each other? 7. "God ordained society, government, and the state when he gave to man his social nature." Could this statement be accepted by an advocate of any one of the theories given?

WRITTEN EXERCISE.

1. Express clearly *your* view concerning the origin of society.

II. The State.

A state is a particular portion of mankind viewed as an organized unit.

THE DEFINITION OF A STATE IMPLIES:

1. National or governmental unity.
2. Geographic or territorial unity.
3. Race unity or ethnic homogeneity.

QUESTIONS.

1. What argument is found in the above against foreign immigration? Against the acquisition of territory? 2. Explain how these elements played a part in the causes of the Civil War of 1861. 3. Name other wars in which these elements were factors. 4. To what extent were they formative principles in shaping the United States constitution? 5. What is meant by the "body politic"?

THE IDEA OF A STATE:

1. All comprehensive.
2. Exclusive.
3. Permanent.
4. Sovereign.

> The crowning fact, the kingliest act of freedom, is the freeman's vote.—*Whittier.*

Questions.

1. What is the social state? 2. What ratio does the number of persons in the social state bear to the political state? 3. Is there a “statele person”? 4. Why is anarchy a permanent impossibility? 5. Loui XIV. said: *L'etat c'est moi* (I am the State). What idea of the stat was enunciated? 6. Adam Smith in his *Wealth of Nations* viewed man as a citizen of the world. State an objection to this view. 7. Ar the words *state* and *nation* synonymous? 8. Point out the differenc between the word *state* as used in political science and its use in popular language. 9. Is Ohio viewed as a state in international law? Give reasons. 10. May we view a county or a city as *a state* from the point of view of Blackstone's definition of law? (Section V.)

Written Exercise.

1. Write a paper on “The State.”

III. Sovereignty.

Sovereignty is the original, absolute, indivisible, and unlimited power of a state over the individual subject and over all associations of subjects.

Questions.

1. Must a state have the power to compel a subject to obey against his will? Illustrate.
2. Can you conceive of a state without sovereignty; *i. e.,* without unlimited power over its subjects?
3. State the distinction between sovereignty and despotism.
4. Is sovereignty higher than moral obligation?
5. “Back of the government lies the constitution; and back of the constitution lies the original sovereign state.” Explain.

IV Government.

Government is the organization of society to secure justice and progress.

The Functions of Government.

1. To establish justice.
2. To provide for the common defense.
3. To promote the general welfare.
4. To insure domestic tranquillity.
5. To secure the blessings of liberty.

The Types of Government as Classified by Aristotle.

1. Monarchy.
2. Aristocracy.
3. Democracy.
4. Mixed.

Questions.

1. Define each type and give an example. 2. Give the etymology of each word. Give the etymology of the word *government*. 3. What is despotism? 4. An oligarchy is a modification of which forn 5. Into which form may we conceive the patriarchal type to ha merged? 6. Define theocracy. Give an example. 7. What is pu democracy? Does such a form exist? 8. Analyze the governme of England, and point out the various forms in it. 9. Which fo of government is most numerous in history? Why? 10. What for of monarchical government exist? Distinguish between the

11. Name the countries of Europe and the form of government in each. **12.** Does the continent of Asia afford more than one type? 13. When may we say a government is bad? 14. Why is there very little meaning in the statement that the government of the United States is the best that exists? 15. "The test or essence of any government is its power to tax." Explain. 16. What is a representative democracy? 17. To determine the form of government of any state ask, "Where does the sovereignty reside?" Apply the question to different nations. 18. What is the distinction between a Federal Government and a Confederate Government? Apply the test of sovereignty. 19. What is the true basis of government for a people? 20. What is the distinction between the *state* and the *government?* 21. What are the objections to a pure democratic form of government? 22. From the point of view of Ethics, should every citizen pay taxes? Why? 23. Name the English Orders of Nobility. 24. What did the word *tyrant* mean in ancient Greek politics? 25. Define politics.

TYPES OF GOVERNMENT CLASSIFIED.

- I. Monarchy.
  - 1. As to power.
    - a. Absolute.
    - b. Limited.
  - 2. As to tenure of office.
    - a. Hereditary.
    - b. Elective.
- II. Aristocracy.—*Oligarchy.*
- III. Democracy.
  - 1. Pure.
  - 2. Representative.—*Republic.*
    - a. As to distribution of power.
      - 1. Centralized.
      - 2. Dual.
    - b. As to the relation of Legislative to Executive.
      - 1. Presidential.
      - 2. Parliamentary.

> We cannot honor our country with too deep a reverence; we cannot love her with an affection too pure and fervent; we cannot serve her with an energy of purpose or a faithfulness of zeal too steadfast and ardent.—*Grimke.*

WRITTEN EXERCISE.

1. Imagine a colony taking possession of an uninhabited island in the Pacific Ocean. State the conditions and institutions necessary to establish one of the types of government.
2. Give the form of government in each of these states: Plymouth Colony; Virginia Colony; Ancient Athens; Sparta; Venice in the Middle Ages; China; Switzerland; Ancient Judea; Rome 509-30 B. C.; Germany.
3. Explain Lincoln's words, "Government of the people, for the people, and by the people."
4. Discuss the relative merits of the different types of government for different conditions of society.

V. Law.

Law is a rule of civil conduct prescribed by the supreme power in a state, commanding what is right, and prohibiting what is wrong.—Blackstone.

SOURCES OF AMERICAN LAW.

- I. English Common Law.
  - 1. Written (*Lex Scripta*).
    - a. Parliamentary Enactments—Statutes.

- 2. **Unwritten Law (*Lex non Scripta*).**
    - a. Records of Courts.
    - b. Treatises on Law.
    - c. Custom.
        - 1. General.
        - 2. Particular.
- II. Colonial development, 1607-1776.
- III. Later constitutions and legislative enactments.

ORDER OF PRECEDENCE OF LAWS IN THE UNITED STATES.

- 1. U. S. Constitution.
- 2. U. S. Statutes and Treaties.
- 3. State Constitutions.
- 4. State Statutes.
- 5. English Common Law.

QUESTIONS.

1. There are two modes of making a government better: evolution and revolution. Explain and illustrate each. 2. What advantages has a written constitution over an unwritten? An unwritten over a written? 3. Where would you look to find the constitution of England? 4. Wha is the meaning of the Magna Charta? Petition of Right? Act of Settlement? Bill of Rights (1688)? Habeas Corpus Act (1679)? Are these a part of the constitution of England? What else? 5. Is an part of our constitution unwritten? Illustrate. 6. "Every state has a constitution considered as an objective fact, or a constitution of th people; but every state has not a constitution considered as an instru ment of evidence, or a constitution of the government." Explain. 7 Illustrate the meaning of precedence of laws. 8. Most states of th United States have adopted by statute all English law not repugnan to their institutions, enacted to the year 1607. Why? 9. What is th civil law of Rome? Ecclesiastical law of England? 10. What is th basis of French law? Louisiana state law? 11. What is the meanin of the sentence, "Parliament is omnipotent"? 12. "Law is a rule o action." Explain. 13. Does law deal with questions of conscienc 14. Would government be necessary if man were morally perfect? 15 What is equity? Illustrate.

A CONSTITUTION DEFINES:

- I. The Political State.
- II. The Government.
    - a. Structure, powers, and duties.
    - b. Restrictions and prohibitions.
    - c. Action.
        - 1. Elections.
        - 2. Legislation.
- III. Amending powers.

> The fundamental law of rights i
> be a person, and respect others
> persons.—*Mulford.*

VI. Rights.

A right is a just claim. Liberty is the freedom of exercise to enjoy our rig and is called political, civil, or religious according to the particular class rights to which it refers.

CLASSIFICATION OF RIGHTS.

- I. Political.
    - 1. To establish a form of government.
    - 2. To exercise the right to vote—suffrage.

- **II.** Civil.
  - 1. Absolute.
    - a. Personal security.
      - 1. Life. 2. Liberty. 3. Reputation.
    - b. Personal liberty.
    - c. Private property.
  - 2. Relative.
    - a. Public.
      - 1. Protection of people by the government.
      - 2. Obedience of the people to the government.
    - b. Private.
      - 1. Relation of husband and wife.
      - 2. Relation of parent and child.
      - 3. Relation of master and servant.
        - *Relation of employer and employed.*
      - 4. Relation of guardian and ward.

QUESTIONS.

1. What is a property right? 2. May two persons have a property right in the same thing? 3. What is communism? Socialism? 4. Is our present public school system socialistic? 5. State the principles of society advocated in Bellamy's *Looking Backward*. 6. What was "The Brook Farm Community"? 7. Could the state, by law, abolish the right in private property? 8. What is the distinction between wealth and a property right? 9. How may one forfeit his political rights? Civil rights? 10. Does a convict forfeit his property rights? 11. What are natural or inalienable rights? Illustrate. 12. Classify the following rights according to the outline: (a) Freedom of speech. (b) Free locomotion. (c) Right to sue and be sued. (d) Freedom of the press. (e) Right of petition. (f) Right to dispose of one's property by will. 13. Can a person enjoy civil rights without political rights? 14. Who are citizens of the United States? Of Canada? 15. What is slander? Libel? 16. Why may a state inflict capital punishment? 17. What argument can you give against common ownership of property? 18. What is the source of political rights? 19. What is the right of eminent domain? Give example. 20. Are the two kinds of rights, political and civil, inseparable?

FOUR GROUPS OF RIGHTS.

1. Political.
2. Industrial.
3. Social.
4. Moral and religious.

WRITTEN EXERCISE.

1. Write a paper on "The Rights Which I Enjoy."

SUGGESTIONS.

1. The teacher should call attention to the salient features of government of other leading nations through this course. Informal talks on the government of England, France, Germany, Mexico, etc., will add interest and cause the student to go deeper into the reasons of things. For this study in comparative politics, *The Statesmen's Year Book*, published by MacMillan & Co., New York, will give all necessary data.
2. During this course the student should read as many as possible of the following documents:

   The Magna Charta, 1215; The Bill of Rights, 1688; the charters of Virginia, Maryland, Connecticut, or Massachusetts; The Mayflower

Compact, 1620; The Articles of the New England Confederation, 1643; Penn's Plan of Union, 1697; Franklin's Plan of Union, 1754; Declaration of Rights, 1765, 1775: The Mecklenburg Resolutions, 1775; The Declaration of Independence, 1776; The Articles of Confederation, 1777; A Treaty with Great Britain (1846); Ordinance of 1787; Washington's Farewell Address, 1796; Kentucky Resolutions, 1798; Hartford Convention Resolutions, 1815; An Act of Secession; Emancipation Proclamation, 1863; The Swiss Constitution, 1874; Act admitting some state to the Union; A Supreme Court Decision in full; A State Constitution; A City Charter.

The teacher cannot place too much emphasis upon reading history and government from original sources.

Patriotism in Literature.

For forms of government let fools contest,
Whate'er is best administered is best.
—*Pope.*

It is better for a city to be governed by a good man than by good laws.—*Aristotle.*

We are more heavily taxed by our idleness, pride, and folly than we are taxed by government.—*Franklin.*

I offer here no olive branch;
  I ask not who was right or wrong;
I care not, so the land we call
  Our own is free and strong.
—*S. K. Phillips*

(Wellington) His work is done;
But while the races of mankind endure
  Let his great example stand
  Colossal, seen in every land,
And keep the soldier firm, the statesman pure,
  Till in all lands and thro' all human story
The path of duty be the way to glory.
—*Tennyson.*

Land of the forest and the rock,
  Of dark blue lake and mighty river,
Of mountains reared aloft to mock
The storm's career, the lightning's shock;
  My own green land forever!
O, never may a son of thine,
Where'er his wandering steps incline,
Forget the skies which bent above
His childhood like a dream of love.
—*Whittier.*

We know what masters laid thy keel,
What workmen wrought thy ribs of steel;
Who made each mast, and sail and rope,
What anvils rang, what hammers beat:
In what a forge, and what a heat
Were shaped the anchors of thy hope.
Fear not each sudden sound or shock,
'Tis but the flapping of a sail,
And not a rent made by the gale.
In spite of rock and tempest roar,
In spite of false lights on the shore,
Sail on, nor fear to breast the storm.
Our hearts, our hopes, are all with thee;
Our hearts, our hopes, our prayers, our tears,
Our faith triumphant o'er our fears
Are all with thee, are all with thee.
—*Longfellow.*

Canadian Literature.

NO nation can be truly great unless it is great in art and literature. The shores of history are strewn with the wrecks of peoples who devoted their energies to the more selfish task of amassing wealth and accumulating territory, but who neglected "the weightier matters of the law." China, with its vast area and countless millions, has had no share in the recent progress of civilization, while the small country of Greece, through her glorious achievements in poetry and the drama, in sculpture and architecture, has been, since the days of Plato, a potent vivifying force in the world's life.

Canada, "the heir of all the ages," has laid to heart this lesson of the centuries and from her earliest dawn we see many evidences of that interest in things of the mind which is the surest sign of real nationhood. Even while the silent savage was still stealing through the pathless forest on his errand of vengeance and while "Our Lady of the Snows" saw her white meadows traversed only by the fearless hunter, the early French explorers had taken pen in hand to record their marvelous achievements in this new land of wonder; and later, under early British rule, when wealth and leisure were still rare among the few members of that limited society, the poet found a place and the sweet strains of Canadian verse mingled with the crash of falling trees and the loud call to arms.

In a survey of a national literature it is of highest importance that we get the true viewpoint. Those who expect of Canada at this stage a second Dante or Shakespeare are forgetting that literature is only the outward expression of a people's inner life; it is the mirror of the nation's character. Not more surely does the placid river reflect the image of the boughs that overhang its crystal waters than does the literature of a people reveal their tastes and customs, their pleasures and follies, their hopes and aspirations, their glories and achievements.

And so, here in "this wide northern land," with the work of the pioneer still fresh in the memory of all and, indeed, still going on in many parts of this broad Dominion, the critic should not look for monumental efforts of genius such as Europe, rich in tradition, learning and culture, has given to the world at Rome, Paris, Berlin and London. No, we should be satisfied with a native Canadian literature "racy, of the soil"; verse that breathes forth the very odor of fresh-ploughed fields and pine forests; and history that records simply but vigorously the labors of the farmer, explorer, soldier, merchant and scholar. The maple may not be as stately as the palm, but at least it is Canada's own. Such a native literature Canada has and it is of such that we give here a brief survey.

Divisions of Canadian Literature.

A. Early French Writers, 1536-1763.
B. Later French Writers, 1841 to the present.
C. British Canadian Writers, 1841 to the present.

The field of Canadian literature is naturally marked off into three sections as above. The early outburst was succeeded by a long silence, as Canada was busy with war, immigration, and an extended political struggle. Then came a second bloom of French writers and with it, as Upper Canada and Nova Scotia emerged from the first pioneer stage, developed a vigorous growth of British Canadian literature, chiefly in poetry and history.

A. Early French Period:

Jacques Cartier, the first French explorer, left an account of his voyage published in France in 1536 and translated into English in 1580; an account of his second voyage was published in 1545.

JACQUES CARTIER.

Champlain in his *Des Savauges; or, Voyage de Samuel Champlain*, gave a record of his first voyage. The work was published in 1604 and later accounts also appeared in 1613 and 1632.

Marc L'Escarbot, a Paris lawyer, who, like the hero of *Locksley Hall*, was disgusted with the Old World, bequeathed to us interesting glimpses of life at Port Royal in the period from 1603 to 1609. His book, *Histoire de la Nouvelle France*, appeared in 1609, and is remarkable for the first Canadian verse which it contains. L'Escarbot may be termed the Father of Canadian Poetry.

Father Sagard, a Jesuit Priest, wrote an account of the missions among th Indians in 1632, and a number of Jesuits produced the first church history under the title *Relations des Jesuites, 1632-1679*, which is a connected account of th devoted labors of the Jesuits during these stormy years.

Louis Hennepin, Christian Le Clerq, Le Baron and La Hontan left accounts of their voyages, while Xavier de Charlevoix, in his *Histoire de la Nouv France*, published in 1774, gives us a concise account of French rule to that dat

B. Later French Writers:

The "still small voice" of the poet and historian was now hushed or unheard for about eighty years. Then we have a long roll of historians, for the serio Canadian nature seemed to have turned first to history. Maximilian Bibaud, François Xavier Garneau and Abbé Ferland wrote on the history of Canad Garneau's work being recognized as the best French-Canadian history. Jose Tasse, the author of *French Pioneers of the West*, L. O. David, who wrote *H toire de Quebec*, as well as Benjamin Sulte and Antoine Gerin Lajoie continu to reap the rich harvest of early French exploration, settlement and valor.

Among the novelists may be mentioned Joseph Marmette, Philip Aubert d Gaspe, Pierre Chauveau, Henri Bourassa and Napoleon Légendre, all of who produced works that were read with interest on both continents.

The line of poets never becomes extinct, and a large number of French Can dian versifiers appear in this period. Michel Bibaud, Garneau, Lajoie, L. Le May, Octave Cremazie, Benjamin Sulte and Louis Fréchette produced br and graceful verse which reflects the polish, wit and perennial gaiety of France. By common consent Fréchette is the greatest of them all. His M

Loisirs, Les Fleurs Boreales and *Les Oiseaux de Neige* won for him the laurel crown from the hands of the French Academy.

C. British Canadian Writers:

Turning to British Canada, we find a wealth of literature, almost all of which has appeared since the Union of 1841. A survey shows us that it is to history, fiction and poetry that the minds of Canadians have chiefly turned; mingled with these is a little science, philosophy and essay-writing.

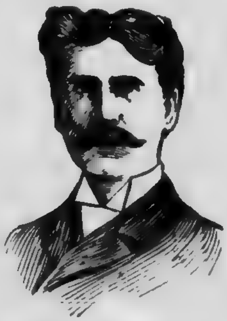
GOLDWIN SMITH.

Among the historians, the chief writers are Eliot Warburton, William Kingsford, James Hannay, Joel C. Haliburton, Goldwin Smith, W. D. LeSeur, John G. Bourinot, John George Hodges, John Miller, George Bryce, John Charles Dent, Henry Withrow, Henry J. Morgan and George M. Wrong. Of these Kingsford's *History of Canada* in ten volumes, Goldwin Smith's *Canada and the Canadian Question* and Wrong's *British Nation* are perhaps the most conspicuous.

In fiction some good work has been done and many Canadian novels have enjoyed a wide popularity in Great Britain and the United States, as well as in Canada. Possibly the five greatest Canadian novels are: Haliburton's *Sam Slick,* John Richardson's *Wacousta,* John L'Esperance's *Les Bastonnais,* Kirby's *Chief D'Or* and Gilbert Parker's *Seats of the Mighty.* Other novelists of repute include Agnes Maule Machar, Agnes Laut, Charles G. D. Roberts, Ralph Connor (Rev. C. W. Gordon), W. A. Fraser, Harvy O'Higgins and Bliss Carman.

GILBERT PARKER.

Ernest Thompson-Seton, the author, artist and naturalist, has written many very interesting books on nature and animal life. He served many years as naturalist to the province of Manitoba and studied wild life throughout the west, lecturing and writing extensively in the meantime. His *Wild Animals I Have Known,* published in 1898, is one of his best known books. Other works include *Lives of the Hunted, The Biography of a Grizzly, The Trail of a Sand-Hill Stag, Two Little Savages, Animal Heroes* and *Monarch, the Big Bear of Talloc.*



ERNEST THOMPSON-SETON.

In poetry there has been a rich and varied harvest of verse. The wonderful natural beauties of Canada which, like Scotland, may be fairly called "Meet nurse for a poetic child" seem to have awakened and nourished the love of poetry, and we have a flood of Canadian song, much of which is of a high order, though, as in every country, mere versifiers without the touch of genius are mingled with the rarer writers within whose hearts there burns the true fire of inspiration. Amid so much genuine merit it is invidious to choose, but we may venture to say that Charles Roberts, Archibald Lampman, Bliss Carman, Theodore H. Rand, Wilfrid Campbell and Isabella Crawford are the poets whom coming ages will place highest on the roll of fame. Others deserving mention include: Charles Heavysege, John Reade, John Stuart Thomson, Charles Mair, Duncan C. Scott, Frederick C. Scott, William Henry Drummond, Agnes Maule Machar (Fidelis), J. W. Bengough, Edward Hartley Dewart, Alexander McLachlan, Jean Blewett, Charles P. Mulvaney, Ethelwyn Wetherald and Pauline E. Johnson.

WILLIAM H. DRUMMOND

With such an array of bards we close this view of Canada's national literature. The native born Canadian may well regard the list with pride. But it is, after all, to the future that the Canadian looks. "The twentieth century is Canada's," Sir Wilfrid Laurier, the eloquent ex-premier of Canada, has declared. And while this ringing prophecy is usually applied to the realms of finance, commerce and industry, it will be even truer of the higher and loftier realms of art and literature.

The people in whose blood runs the Saxon courage and perseverance mingled with Celtic grace and fire, a people hardy and vigorous enough to endure the severities of a northern climate, a people whose educational system is excelled by none, may be counted on to produce the highest type of work in art and literature.

> *"What past can match thy glorious youth,*
> *Fair Canada of ours!"*

Selections from Canadian Literature.

Canada's Future.

Isabella Valancy Crawford (1851-1887), ranked as the truest Canadian poet by some, contributes to the national feeling in this manner:

How sounds my voice my warrior kinsman now?
Sounds it not like to thine in lusty youth—
A world-possessing shout of busy men,
Veined with the clang of trumpet and the noise
Of those who make them ready for the strife,
And in the making ready bruise its head?
Sounds it not like to thine—the whispering vine,
The robe of summer rustling through the fields,
The lowing of the cattle in the meads,
The sound of commerce and the music-set,
Flame-brightened step of art in stately halls,
All the infinity of notes which chord
The diapason of a nation's voice.

Charles Sangster (1822-1893) may be quoted as contributing happy sentiments to the national spirit:

Health smiles with rosy face
Amid our sunny dales,
  And torrents strong
  Fling hymn and song
Through all the mossy vales;
Our sons are living men,
Our daughters fond and fair,
  A thousand isles
  Where plenty smiles
Make glad the brow of care.

Alexander McLachlan (1818-1896), in *Lyrics,* published in 1858, sings of manhood and the spirit of freedom:

I'll seek the northern woods she cried (Genius of Canada)
  Tho' bleak the skies may be.
The maple dells where freedom dwells
  Have special charms for me.

For moral worth and manhood there
  Have found a favoring clime,
I'll rear a race for long to grace
  The mighty page of time.

Edward Hartley Dewart (1828-1903), in his *Songs of Life,* rises to the occasion of well written verses on future greatness:

Give joy a tongue, let peaceful mirth
  Dispel all faithless fears,
We hail a youthful nation's birth
Who in the wondering eyes of earth
  Takes rank among her peers.

Fling out our banner to the breeze
  And proudly greet the world
With words of amity and peace:
For never on more halcyon seas
  Was freedom's flag unfurled.

For though the past has records few
  Of battle song and story
The future rises fair to view,
Gleaming with morning's youthful dew
  And bright with coming glory.

Canadian Scenery.

Sir J. D. Edgar (1841-1899) writes in this manner in his *Campings:*

A white tent pitched by a glassy lake
  Well under a shady tree,
Or by rippling rills from the grand old hills
  Is the summer home for me.

I fear no blaze of the noontide rays
  For the woodland glades are mine,
The fragrant air and the perfume rare
  The odor of forest pine.

The wild woods, the wild woods,
  The wild woods give to me,
The wild woods of Canada,
  The boundless and the free.

Edward Hartley Dewart, in his *Ode to Canada,* sings as follows:

I love thy green and towering hills,
    Thy valleys rich and fair;
Where wealth in pearly dew distils
The cool meandering forest rills
    Hid from the summer glare.

I love thy rivers, broad and free,
    Thy cataracts sublime;
Where God unveils his majesty
Whose hymns make grandest melody
    That strikes the ear of time.

I love when autumn's brilliant dyes
    Thy forest foliage stain,
And nature yields her rich supplies;
I love when winter's ermine lies
    On river, wood and plain.

The following is an extract from Dewart's *Snowflakes:*

Softly the fragile ermine snowflakes fall
From the dim cloud-land of their airy birth,
They come to shroud the naked, shivering earth
Like heaven's vast love which crowns and covers all.
They whirl and dance through all the frosty air—
On lakes and rivers fall and melt unseen;
Each branching spray receives an ample share
Till woods are fairer than in summer green.

Agnes Maule Machar (Fidelis), the Kingston poet, writes:

In winter robes of virgin snow,
    We proudly hail thee ours;
We crown thee when the south winds blow,
    Our lady of the flowers.

We love the rainbow-tinted skies,
    The mystic charm of spring;
For us thine autumn gorgeous dyes,
    For us thy songbirds sing.

God bless our own Canadian land
    Of mountain, lake and river,
Whose loyal sons from strand to strand
    Sing "Canada forever."

John Wilson Bengough (born in 1851), one of our most graceful versifie gives us a glowing tribute to Canadian rivers in a poem entitled *Unity Day:*

A thousand streamlets, 'neath the auroral light
Of the far silent north, shine as they wend
And waver southward; from the sunset west
A thousand more down from the mountains glance
And wander o'er the prairie deviously
In lonely course till here and there they meet
And kiss and join their waters into one
And stronger flow toward the eastern lake,
Mingling with joy of dancing wave; then on
In the new power of river lordlier grown,
With [illegible] league of way to lordlier lake
N[illegible]d to wind-swept sea; thence on again
Alte[illegible] lake and river, through the gorge
Where echoes that have rung since time began
Still roar amazement at the wondrous fall
That awes the world; still eastward past the isles
The thousand emeralds scattered in the stream
To show God's boundless bounty—on and on
In the majestic sweep of deep clear flood,
Past stately cities, peaceful, sloping farms
And villages that seem to kneel in prayer;
A river of imperial renown,
Named with an almost sacred reverence,
    Our glorious Saint Lawrence.

Poems of Truth and Life.

Archibald Lampman (1861-1899), perhaps the greatest of the Ontario poets, in *The Truth,* reaches a high plane of eloquence:

Friend, though thy soul should burn thee, yet be still.
Thoughts were not made for strife, nor tongues for swords.
He that sees clear is gentlest of his words,
And that's not truth that has the heart to kill.
The whole world's thought shall not one truth fulfill.
Dull in our age and passionate in our youth,
No mind of man hath found the perfect truth
Nor shall thou find it; therefore, friend, be still.
Watch and be still nor hearken to the fool,
The babbler of consistency and rule;
Wisest is he who, never quite secure,
Changes his thoughts for better day by day.
To-morrow some new light will shine, be sure,
And thou shalt see thy thought another way.

Charles Roberts (born in 1860) in his poem, *The Dignity of Man,* rises to lofty heights in the field of poetry:

In the wide awe and wisdom of the night,
  I saw the round world rolling on its way,
Beyond significance of depth or height,
  Beyond the interchange of dark and day.
I marked the march to which is set no pause,
  And that stupendous orbit round whose rim
The great sphere sweeps, obedient unto laws
  That utter the great eternal thought of him.

I compassed time, outstripped the starry speed,
  And in my still soul apprehended space,
Till weighing laws which these but blindly heed
  At last I came before him, face to face;
And knew the universe of no such span
  As the august infinitude of Man.

George Frederick Cameron (1854-1885), in his *True Greatness,* happily writes of the beauty of peace and home life:

What is true greatness? Question not,
But go to yon secluded spot,
And enter yonder humble cot,
And find a husbandman who never fought
        Or wronged his kind;
For whom the lips of war are dumb;
Who loves far more than beat of drum
The cattle's low, the insect's hum in air
And finds true greatness in its sum
        And total there.

Archibald Lampman, in his sonnet *On Knowledge,* gives us a beautiful picture of life:

What is more large than knowledge and more sweet?
Knowledge of thought and deeds, of rights and wrongs,
Of passions and of beauties and of songs;
Knowledge of life; to feel its great heart beat
Through all the soul upon her crystal feet;
To see, to feel, and evermore to know;
To tell the old world's wisdom till it grow
A garden for the wanderings of our feet.
    O for a life of leisure and broad hours
To think and dream, to put away small things,
This world's perpetual leaguer of dull naughts;
To wander like the bee among the flowers,
Till old age find us weary, feet and wings
Grown heavy with the gold of many thoughts.

Miscellaneous Poems.

Here is a characteristic Canadian scene from the poetical pen of Pauline E. Johnson (1862-1913), the Indian poet:

At husking time the tassel fades
To brown above the yellow blades,
Whose rustling sheath,
That bursts its chrysalis in scorn
Longer to lie in prison shades.

Among the merry lads and maids,
The creaking ox-cart slowly wades
Twixt stalks and stubble, sacked and torn,
At husking time.

The prying pilot crow persuades
The flock to join in thieving raids;
The sly raccoon with craft unborn
His portion steals; from plenty's horn
His pouch the saucy chipmunk lades
At husking time.

Archibald Lampman gives us this picture of autumn:

I see the wood-wrapt city, swept with light,
The blue long-shadowed distance and between
The dotted farm-lands with their parcelled green,
The dark pine forest and the watchful height.
I see the broad rough meadow stretched away
Into the crystal sunshine, wastes of sod,
Acres of withered vervain, purple-gray,
Branches of aster, groves of goldenrod;
And yonder towards the sunlit summit strewn
With shadowy boulders, crowned and swathed with weed
Stand ranks of silver thistles, blown to seed,
Long silver fleeces, shining like the moon.

Margaret Currie, the New Brunswick poet, writing of her favorite river, Saint John, sings thus:

The broad round-shouldered giant Earth
Upbears no land more sweet
Than that whereon in childish mirth
Went free my childish feet;
No fairer river furroweth
With its strong steel-blue share
Than that which floweth there.

Now that the green is on the plain,
The azure in the sky,
Wherewith clear sunshine after rain
Decketh the rich July;
Broad is the leaf and bright the flower;
Close to the pale gray sands
Coarse alder grows and virgin's bower
Grasps it with slender hands.

With honeysuckles, meadow-sweets
And rue the banks are lined
O'er wide fields dance gay marguerites
To pipe of merry wind,
By the tall tiger-lily's side
Stands the rich goldenrod,
A king's son wooing for his bride
The daughter of a god.

Richard Huntington, the Acadian poet, and editor for thirty years of the *Yarmouth Tribune,* sings of the river Tusket in Nova Scotia as follows:

Glows in the kindling east a blush,
Morn's old and immemorial flush;
Afar the distant Tusket's rush

Is heard, in muffled murmur deep,
As past green isle and headland steep
Its eddying waters seaward sweep.

Morn's steps advance, and lo! the west
Hath dawned a new and glorious vest
Of purple and of amethyst.

Joseph Foran (born in 1857), a Montreal journalist, thus speaks of our northern skies in winter:

In the north, behold a flushing,
Then a deep and crimson blushing,
Followed by an airy rushing
    Of the purple waves that rise!
As when armèd host advances,
See a silver banner dances
And a thousand golden lances
Shimmer in the boreal skies—
    The vision slowly dies!

Pauline Johnson, the Indian poet, portrays the beauties of a Canadian rapids:

And oh, the river runs swifter now;
The eddies circle about my bow
    Swirl, swirl,
How the ripples curl
In many a dangerous pool!

And forward for the rapids' roar,
Fretting their margin forever more!
    Dash, dash,
With a mighty crash,
They seethe and boil and bound and splash.

Archibald Lampman, singing of June, tells us of the beauties seen in the growing season:

Gone are the wind-flower and the adder-tongue
And the sad drooping bell-wort, and no more
The snowy trilliums crowd the forest floor;
The purpling grasses are no longer young,
    And summer's wide set door,
O'er the thronged hills and the broad panting earth,
Lets in the torrent of the later bloom,
Haytime and harvest and the aftermath,
The slow soft rain, the rushing thunder-boom.

William Douw Lighthall (born in 1857), a Montreal lawyer, voices his pride in our lovely maples thus:

Rome, Florence, Venice—noble, fair and quaint
They reign in robes of magic round me here:
But fading, blotted, dim, a picture faint
With spell more silent only pleads a tear.
Plead not, thou hast my heart, O picture dim!
I see the fields, I see the autumn hand
Of God upon the maples! Answer him
With weird translucent glories, ye that stand
Like spirits in scarlet and amethyst!
I see the sun break over you; the mist
On hills that lift from iron bases grand
Their heads superb!—the dream, it is my native land.

Robert Reid writes in this manner of the mountains:

Sing me the night of her giant mountains
Bring their brows in the dazzling blue,
Changeless alone where all else changes,
Emblems of all that is grand and true;
Free as the eagles around them soaring,
Fair as they rose from their Maker's hand,
Shout till the snow-caps catch the chorus—
The white-topped peaks of our mountain land.

Writing of a sudden frost following a thaw, Charles G. D. Roberts gives us this exquisite picture:

The silver saplings bending
Flashed in a rain of gems,
The statelier trees attending
Blazed in their diadems.
White fire and amethyst,
All common things had kissed,
And chrysolites and sapphires
Adorned the bramble stems.

William Wilfrid Campbell (born in 1861) pays his tribute to Thunder Cape:

Storm-beaten cliff, thou mighty cape of thunder,
Rock-Titan of the north whose feet the waves beat under:
Cloud-reared, mist-veiled, to all the world a wonder,
Shout out in thy wild solitude asunder,
O Thunder Cape, thou mighty cape of storms!

Burton Lockhart (born in 1850), the Nova Scotia poet and later a minister in New Hampshire, U. S., thus praises the Gaspereau:

Do you remember, dear, a night in June
So long, so long ago,
When we were lovers wandering with the moon
Besides the Gaspereau?

The river plashed and gurgled through its glooms
Slow stealing to the sea,
A silver serpent: in the apple blooms
The soft air rustled free.

And o'er the river from afar the sound
Of mellow tinkling bells,
From browsing cattle stirred the echo round
In gentle falls and swells.

Bliss Carman (born in 1861), the journalist and poet of New Brunswick, touches many phases of interest in his extensive writings. The following from *The Joys of the Road* is characteristic of his beautiful thoughts on life and kindred subjects:

And oh the joy that is never won,
But follows and follows the journeying sun,
By marsh and tide, by meadow and stream,
A will-o'-the-wind, a light-o'-dream,
Delusion afar, delight anear,
From morrow to morrow, from year to year,
A jack-o'-lantern, a fairy fire,
A dare, a bliss, and a desire!

. . . .

The broad gold wake of the afternoon:
The silent fleck of the cold new moon:
The sound of the hollow sea's release
From stormy tumult to starry peace;
With only another league to wend,
And two brown arms at the journey's end:

These are the joys of the open road—
For him who travels without a load.

William Kirby (1817-1906), publisher of the Niagara *Mail*, is a well known writer of prose and poetry. His best work in prose is *The Golden Dog*, which has been read extensively beyond the borders of Canada. In his *Pontiac* he writes of the Niagara River:

The broad majestic river full of light
Flowed past in silence—where alone was heard
The refluent eddy, lapping on the rocks
Of narrow footing underneath the cliffs.

In his *Stoney Creek* he writes of Lake Ontario:

Where Lake Ontario lays his stately head
In the broad lap of hills, that stretch away
To the long slopes of Flamboro', forest clad
With oak and beach, and many a spiry pine
Fast rooted to the crags.

He writes of men:

Alas! if God's or woman's love should cease
Because of faults in men! Then lost, indeed,
Were he, without a hope to gild his lot!

Questions.

Into how many general divisions is Canadian literature divided? Name them.

Who is known as the "Father of Canadian poetry"?

Along what particular lines is the native Canadian literature written? How does it reveal the character of the people?

Mention three writers of history. Whose work is recognized as the best?

Mention five great novelists and their masterpieces.

Give a list of the leading poets of Canada. What can you say of Fréchette and his writings?

Why does the maple hold such a prominent place in Canadian literature?

What characteristics of life are revealed in the writings of Pauline E. Johnson?

Rehearse some traits of the life of Champlain as revealed in his stories of voyage and adventure.

Give a brief account of the work of the Jesuits in the early days among the Indians as recorded by Father Sagard.

Name the most conspicuous works of Canadian history.

Give a list of the writings of Ralph Connor.

What can you say of the outlook for Canada's future along literary lines?

Who are some of the famous writers of biography?

Which are considered the nature poets of Canada?

Let Knowledge grow from more to more
(Tennyson)

Algebra.

ALGEBRA is the department of mathematics which employs certain symbols and thereby shortens and simplifies the solution of arithmetical problems. Sir Isaac Newton termed this branch of study universal arithmetic.

It is thought that Diophantes of Egypt originated this science in the 4th century B. C., when Alexandria was renowned as a center of learning. The oldest manuscript in which algebra is treated is that of Ahmes, who, in 1700 B. C., copied a treatise which was written about 2500 B. C. Little was known of algebra in Europe until the 9th century A. D., when it was introduced in the greater part of the continent through the efforts of Mohammed Ben Musa.

Algebra is now a part of the curriculum of all accredited schools. In many school systems it is a supplementary branch and is taught in connection with arithmetic in the grammar grades. Eminent scholars frequently apply algebraic methods to problems in logic, psychology and other sciences.

The Unknown Quantity.

The unknown is the nucleus of attraction. It is the center of mental gravitation. It was a desire to discover the unknown that led Columbus to brave the dangers of the untried and dreaded waves of the stormy Atlantic. The same desire has led other discoverers to discover; it has caused the inventor to invent. The great and glorious reformations of the world were wrought through the mental activities in seeking to know and inquiring into the new and unknown.

The charm of the study of algebra is due to the hold this subject has upon the mind in seeking for the unknown quantity. The logical reasoning, step by step, and the approach to the final conclusion, which reveals the value of the unknown quantity, hold the mental faculties close and firm in fascinating relevancy.

The value of the study of algebra as a mental invigorator cannot be overestimated. It strengthens the reasoning powers, stimulates the observation, develops precision and fosters accuracy.

The first lessons in algebra should be an introduction to the simplest method of discovering the value of the unknown quantity. Consequently, a long list of elementary problems involving one unknown quantity should be presented to a beginner. A few sample problems will be given in this brief work.

PROBLEM: John and William together picked 120 boxes of berries. William picked 20 boxes more than John. How many boxes did each pick?

Represent the unknown quantity by X. The beginner will at once tell you that there are two unknown quantities. That is true, but when either becomes known the other is no longer unknown. Allow the pupil the privilege of judging

which of the unknown quantities shall be represented by X. Two solutions no doubt will be deduced.

Solution I. **Let X=number of boxes picked by John.**
Then $X+20$=number of boxes picked by William.
$X+X+20=120$. Number of boxes picked by both.
$2X+20=120$
$2X=120-20$
$2X=100$
$X=50$. Number of boxes picked by John.
$X+20=70$. Number of boxes picked by William.

Solution II. Let X=number of boxes picked by William.
Then $X-20$=number of boxes picked by John.
Adding $X+X-20=120$
$2X-20=120$
$2X=120+20$
$2X=140$
$X=70$. Number of boxes picked by William.
$X-20=50$. Number of boxes picked by John.

Other solutions of the same problem may be suggested by the pupil. This tendency on the part of the pupil should be encouraged. See who can give another solution to the same problem.

Solution III. Let X=number of boxes picked by John.
Then $120-X$=number of boxes picked by William.
$120-X-X=20$
$120-20=X+X$
$100=2X$
$2X=100$
$X=50$. Number of boxes picked by John.

Allowing more than one solution to the same problem adds to the a[illegible]tiveness, begets originality and inculcates independence of thought.

PROBLEM II: The sum of two numbers is 60. The greater exceeds the less by 12. What are the numbers?

Again permit the learner to decide what quantity should be represented by X.

Solution I. Let X=the less number.
Then $X+12$=the greater number.
Adding $X+X+12=60$
$2X+12=60$
$2X=60-12$
$2X=48$
$X=24$. The less number.

Solution II. Let X=the greater number.
$X-12$=the less number.
Adding $X+X-12=60$
$2X-12=60$
$2X=60+12$
$2X=72$
$X=36$. The greater number.

Solution III. Let X=the less number.
$60-X$=the greater number.
$60-X-X=12$
$60-12=X+X$
$48=2X$
Reversing $2X=48$
$X=24$. The less number.

Scores of such problems with similar solutions should precede the fundamental operations of algebra. It will lead the growing mind to love to seek for the value of the unknown.

THE COEFFICIENT. The term *coefficient* is new to those taking the initial ste in algebra. It means a number or letter placed before a mathematical quantity t show how often it is to be taken. In the expression 5 X, 5 is the coefficient and signifies that the quantity X is to be taken 5 times. In $3(x+y)$, 3 is the c efficient and indicates that the sum of x and y is to be taken 3 times.

In $x(y+2)$, x is the coefficient and shows that the sum of y and 2 is to b taken as many times as there are units in x. In $(c+d)z$, $c+d$ is the coefficient o z, and implies that z is to be taken as many times as there are units in the su of c and d.

EXPONENTS. They have the same significance in algebra as in arithmeti In the expression 9^2, the small 2 placed at the right of the upper part of 9 is t exponent and means that 9 should be taken twice as a factor. $9^2=9\times9$ S x^2 is read x square or x raised to second power, and means that x is to be used twice as a factor. x^3 is read x cube or x raised to the third power and means that x is to be used three times as a factor.

The exponent shows that the quantity affected by the exponent is to be taken as a factor as many times as there are units in the exponent.

x^4 means that x is to be taken four times as a factor, that is, x is multiplied by x, then by x and again by x. When no exponent is expressed it means that the exponent is 1. x means x^1.

Signs of Aggregation.

The *parenthesis* ( ), the *brace* { }, the *bracket* [ ] and the *vinculum* ——— are all signs of aggregation. They all have the same meaning. The pu pose of these signs is to show that the expression included within them is to b treated as one quantity.

$50-(7+4)=39$. We treat $(7+4)$ as a single number, viz. 11, the sum of 7 and 4. $50-(7-4)=47$. Here again the expression within the bracket, $[7-4]$, is treated as a single number, viz. 3, the difference of 7 and 4. Removing t signs of aggregation, the first expression becomes $50-7-4=39$, and removi the sign of aggregation the second expression becomes $50-7+4=47$. Hen we deduce the following rule for removing signs of aggregation:

RULE. In removing a sign of aggregation preceded by the sign minus, change all the signs included within the sign of aggregation. That is, the plu signs become minus and the minus signs become plus.

When the sign of aggregation is preceded by the sign plus, no signs a changed. Simply erase the sign of aggregation. Signs of aggregation are oft enclosed within each other. In such cases they may be removed in succession b the rule given above. For beginners it is advisable to remove the innermost p first. Simplify the following by removing signs of aggregation:

$7x-(2x+\{-3x-\overline{x}-2y\})$. Removing the vinculum first as it is inn most, we have $7x-(2x+\{-3x-x+2y\})$. There being a + before the bra no signs are changed. Removing the parenthesis, the expression becomes $7x+3x+x-2y$. All signs within the parenthesis are changed because the pa thesis is preceded by the sign —. Collecting, the expression becomes 9x— Answer.

Simplify $6a+(a-b)-(-4b+2a)=6a+a-b+4b-2a=5a+3b$. Answer.

Simplify $25-(4-[3-\overline{15+6}])=$
$25-(4-[3-15-6])=$
$25-(4-3+15+6)=$
$25-4+3-15-6=3$

THE NUMERICAL VALUE. The numerical value of an algebraic expression is found by stating the value each letter has and then performing the operation indicated. Supposing $a=3$, $b=5$, $c=6$; find the numerical value of the following:

$3a-b+2c$: $3a-b+2c=9-5+12=16$

$3a-(b+2c)$: Removing the parenthesis, $3a-b-2c=9-5-12=-8$.

$10a-b^2+c^2$: $10a-b^2+c^2=30-25+36=41$.

$$\frac{ab^2}{c}:\quad \frac{ab^2}{c}=\frac{3\times 25}{6}=\frac{75}{6}=12\tfrac{1}{2}.$$

a^2-b: $a^2-b=9-5=4$.

$$\frac{b^3}{c}:\quad \frac{b^3}{c}=\frac{125}{6}=20\tfrac{5}{6}.$$

Supposing $x=7$, $y=8$, $z=10$; find the numerical value of the following:

$2(x+2y)$: $2(x+2y)=2(7+16)=2\times 23=46$.

$4x-2(2z-x)$: $4x-2(2z-x)=28-2(20-7)=28-2\times 13=28-26=2$.

$$\frac{x}{2}-\frac{y}{4}:\quad \frac{x}{2}-\frac{y}{4}=\frac{7}{2}-\frac{8}{4}=3\tfrac{1}{2}-2=1\tfrac{1}{2}.$$

$$\frac{z^2}{y^2}:\quad \frac{z^2}{y^2}=\frac{10^2}{8^2}=\frac{100}{64}=1\tfrac{36}{64}=1\tfrac{9}{16}.$$

Supposing $d=1$, $c=12$ and $e=2$; find the numerical value of the following:

$$\frac{2c-d}{2}:\quad \frac{2c-d}{2}=\frac{2\times 12-1}{2}=\frac{23}{2}=11\tfrac{1}{2}.$$

e^2-d^2: $e^2-d^2=2^2-1^2=4-1=3$.

$$\frac{c}{e^2}:\quad \frac{c}{e^2}=\frac{12}{4}=3.$$

$c^2-8(e^2-1)$: $c^2-8(e^2-1)=144-8(2^2-1)=144-8(4-1)=144-(32-8)=144-32+8=152-32=120$.

THE DOUBLE MEANING OF + AND —. Operations in algebra are indicated by the same signs as those used in arithmetic and need no discussion here. The sign + has two meanings as has the sign —. The sign + is used as in arithmetic to denote the operation of addition. It also marks that a quantity has a value above zero. For example, +10 means 10 more than zero. The sign — as in arithmetic indicates subtraction. It also marks that a quantity has a value below zero. For example, —10 means 10 less than zero.

Negative and Positive Quantities.

A *negative* quantity, that is, a quantity preceded by the sign —, is new to the beginner of algebra and should have a full explanation before he is introduced to the subject of algebraic addition.

A negative quantity means less than 0, or less than nothing. The inquiring mind may ask, "Can a thing be less than nothing?" The explanation most tangible to the mind of a youth is, "Can not a person be in debt without having property or money, or can not a man's liabilities exceed the value of his property, money and credit?" The asking of such questions on the part of the student indicates mental growth and should be encouraged. When the learner is able to ask an intelligent question about any subject his mind is in a receptive state and explanations are then productive of understanding.

Positive **quantities are those preceded by the sign plus (+) or by no sign at all, the sign + being omitted before the first quantity of a series, as 4x+3y.**

The Positive Sign.

Paul, when a boy, would often
Wish for a pony ride;
He pondered o'er the notion
And thus he did decide:

"I'll work and save my earnings,
If e'er so small they be;
I'll satisfy my yearnings
By strict economy."

Soon he saved up dollars ten
To buy a pony fine;
Ten dollars we will mark, then,
By the pos-i-tive sign (+).

The Minus Sign.

Edward was a neighbor boy
Who evil folly learned;
To him things useless were a joy,
He spent more than he earned.

He borrowed coin where'er he could,
He little worked, but played;
His friends left him (we thought they would),
Thus he was much dismayed.

His debt soon was dollars ten
And made him squirm and whine;
This debt, my lad, now as then,
We'll give the minus sign (—).

Addition.

Algebraic addition is the process of combining. When the quantities are all either positive or negative, there is no difference between addition in arithmetic and in algebra. e. g. 5x+6x=11x. —5x+—6x=—11x. Both of the above operations should be illustrated by the use of problems, conceiving the negative quantities to represent debt and the positive quantities to represent money.

PROBLEM I. One week John earned \$5x and the next week he earned \$6x. In both weeks he earned how many dollars?

Solution: \$5x+\$6x=\$11x.

PROBLEM II. Mr. Jones contracted a debt of \$5x on Monday. On Tuesday he contracted a debt of \$6x. He then had how large a debt?

Solution: —\$5x+—\$6x=—\$11x.

The two additions may be indicated as follows:

$$\begin{array}{lr} \text{Add} & \$5x \\ & \$6x \\ \hline & \$11x. \end{array} \qquad \begin{array}{lr} \text{Add} & -\$5x \\ & -\$6x \\ \hline & -\$11x. \end{array}$$

The next step in addition should consist of combining positive and negative quantities. Suppose a boy earns \$5x in a week but has a debt of \$2x; what are his finances at the close of the week?

Adding or combining, \$5x+—\$2x=\$3x.

Suppose a boy earned \$2x in a week but has a debt of \$5x; what are his finances at the close of the week?

Adding or combining \$2x+—\$5x=—\$3x.

These additions may be indicated as follows:

$$\begin{array}{lr} \text{Add} & \$5x \\ & -\$2x \\ \hline & \$3x. \end{array} \qquad \begin{array}{lr} \text{Add} & \$2x \\ & -\$5x \\ \hline & -\$3x. \end{array}$$

In the first case the boy has \$3 in money. In the second case the boy would have a debt of \$3.

Unlike quantities or quantities represented by different letters such as x and y can be added or combined only by use of sign. Thus the sum of x and y is x+y. The sum of x and —y is x—y.

PROBLEMS IN ADDITION.

$$\begin{array}{rr} & 3x+2y \\ & 4x-8y \\ \hline \text{Sum} & 7x-6y \end{array} \qquad \begin{array}{rr} & 6x+5b \\ & -8a+b \\ & 3a-10b \\ \hline \text{Sum} & a-4b \end{array} \qquad \begin{array}{rr} & 4x-3y+5z^2-4 \\ & -2x-y+2z^2+3 \\ & -x-2y+z^2-2 \\ \hline \text{Sum} & x-6y+8z^2-3 \end{array}$$

Algebraic Subtraction.

Subtraction is the process of finding how much must be added to the subtrahend to make it equal the minuend. This method of teaching subtraction will apply to arithmetic as well as to algebra. A child learns that $8-5=3$. At the same time he should learn that 3 must be added to 5 to make 8. This thought is the underlying principle of algebraic subtraction.

PROBLEM.

$$\begin{array}{rl} 4a-9b+c & \text{Minuend.} \\ -a+2b-3c & \text{Subtrahend.} \\ \hline 5a-11b+4c & \end{array}$$

Steps in the explanation of the solution:

Keeping in mind that the negative quantity $-a$ represents debt, ask what must be added to $-a$ to make $+4a$. Answer $5a$. To make it more easily understood, ask what must be added to a debt of one dollar to make 4 dollars. Answer 5 dollars. What must be added to $2b$ to make $-9b$? Answer $-11b$. What must be added to \$2 to make a debt of \$9? Answer: A debt of \$11 represented in algebra by -11.

Again conceiving the negative quantity as debt, ask what must be added to $-3c$ to make c. Answer $4c$. What must be added to a debt of \$3 to make it \$1? Answer \$4. Many similar problems should be given every beginning class in algebra. From this process we deduce the general rule for subtraction:

RULE. To subtract one quantity from another, change the signs of the subtrahend and proceed as in addition.

Allow a student to actually change the signs of the subtrahend but a few times. The more apt learner need not stop to change signs but only imagine the signs of the subtrahend changed and all should do so before considering the subject of subtraction mastered.

PROBLEMS.

$$\begin{array}{rl} 7x+4z^2-5 & \text{Minuend.} \\ -2x-z^2-2 & \text{Subtrahend.} \\ \hline 9x+5z^2-3 & \end{array} \qquad \begin{array}{rl} -8a-4c+8cd & \text{Minuend} \\ -3a+4c+2cd & \text{Subtrahend} \\ \hline -5a-8c+6cd & \end{array}$$

$$\begin{array}{rl} 4xy-z+xz & \text{Minuend} \\ 2xy-z-2xz & \text{Subtrahend} \\ \hline 2xy-0+3xz & \end{array} \qquad \begin{array}{rl} 14a^2+6b^2-3c & \text{Minuend} \\ -10a^2+4b^2-4c & \text{Subtrahend} \\ \hline 24a^2+2b^2+c & \end{array}$$

A *monomial* is an algebraic expression unconnected with any other by the sign of addition, subtraction, equality or inequality. It may be said to consist of but one term, as a, b^2, $4xy$, $3x^2y$.

A *binomial* is an algebraic expression of two terms connected by the sign $+$ or $-$, as $a+b$, $2x-3y$, $4xy^2-3z^2$.

A *trinomial* is an algebraic expression consisting of three terms connected by the sign $+$ or $-$, as $3a-b+c$, $x+y+2z$.

A *polynomial* is an algebraic expression consisting of two or more terms connected by the sign $+$ or $-$, as $a+b-d+2$, $b+c$, $x-y+3z$, $5x^2y^4-9x^3y^3+x^2y^2z-xz-z^2$

Multiplication in Algebra.

Multiplication in algebra does not differ from multiplication in arithmetic when quantities are represented by numerals, and the signs of the multiplicand and multiplier are like signs.

The laws governing the signs and exponents should be carefully studied by a beginner of algebra.

We know by arithmetic that $4\times3=12$, that $4\times4=4^2=16$. Then x multiplied by $x=x^2$, y times $y=y^2$, xy times $xy=x^2y^2$.

By arithmetic the student knows that $5\times5\times5=5^3=125$; that $3\times3\times3=3$ 27. Applying the same law we have $a\times a\times a=a^3$, $ab\times ab\times ab=a^3b^3$; $z\times z\times z=z^3$.

We know that 4 is the square of 2 or 2^2; $4\times4=16$; $2^2\times2^2=2^4=2\times2\times2\times2=16$. 16 is the fourth power of 2; thus $2^4=16$. Therefore $a^2\times a^2=a^4$.

8 is the cube of 2. $8\times2=16$, or $2^3\times2=16=2^4$. Applying the same law $a^3\times a=a^4$.

16 is the fourth power of 2; written $2^4=16$, 2 is the first power of 2; $16\times2=32$ or $2^4\times2=2^5=32$. 32 is the fifth power of 2. Applying the same law to literal quantities we have $a^4\times a=a^5$. Hence the law:

The exponent of a literal quantity in the product is equal to the exponent of the same quantity in the multiplicand plus the exponent of the same quantity in the multiplier.

In other words, when multiplying like quantities, add the exponent of multiplier to exponent of multiplicand. Thus: a times $a=a^2$; x^2 multiplied by $x^4=x^6$; $b^2\times b\times b^5=b^8$, $cd^2\times c^3d\times c^2d^4=c^6d^7$.

In arithmetic we are taught that multiplication is a short process of division. In algebra it seems to be a short method of either addition or subtraction. 10 multiplied by $3=30$; that is, we have added 10 three times to 0. 10 multiplied by $-3=-30$. Here we have subtracted 10 three times from 0. -10 multiplied b $3=-30$. Here we have added -10 three times to 0. Add a ten dollar de three times to nothing and we have a thirty dollar debt. As stated before, debt i represented by a negative quantity. -10 multiplied by $-3=+30$ or 30. Here we have subtracted -10 three times from 0 and get $+30$.

When we subtract debts we pay them. When we have paid three ten-dolla debts we are 30 dollars better off than we were before we paid them or before w subtracted the debts. Hence the law governing the signs in multiplication of algebra are as follows:

A quantity preceded by the sign + multiplied by a quantity preceded by th sign + produces a positive quantity, that is one preceded by +. A quantity pre ceded by the sign − multiplied by a quantity preceded by the sign − produce positive quantity. A quantity preceded by the sign − multiplied by a quanti preceded by the sign + produces a negative quantity or a quantity preceded b the sign −. A quantity preceded by the sign + multiplied by a quantity precede by the sign − produces a negative quantity.

This law tersely stated is as follows:

In multiplication, like signs produce + and unlike signs produce −. Solvin the following, we have:

$7x^2$ multiplied by $2x^6=14x^8$	$5b^3$ multiplied by $-3ab=-15ab^4$
$-8a^2$ multiplied by $-3a^3=+24a^5$.	$-4xy$ multiplied by $7x^2yz=-28x^3y^2z$

PROBLEMS.

$6a-4$	Multiplicand	$9x^2-4z^2$	Multiplicand
$3a$	Multiplier	$-2x$	Multiplier
$18a^2-12a$	Product.	$-18x^3+8xz^2$	Product.

$a - b$ Multiplicand
$a - b$ Multiplier
$a^2 - ab$
$\quad - ab + b^2$
$a \ -2ab + b^2$ Product.

$a + b$ Multiplicand
$a + b$ Multiplier
$a^2 + ab$
$\quad + ab + b^2$
$a^2 + 2ab + b^2$ Product.

$2x + 5$ Multiplicand
$6x - 1$ Multiplier
$12x^2 + 30x$
$\quad - 2x - 5$
$12x^2 + 28x - 5$ Product.

$x^2 - xy + y^2$ Multiplicand
$x + y$ Multiplier
$x^3 - x^2y + xy^2$
$\quad + x^2y - xy^2 + y^3$
$x^3 \quad + y^3$ Product.

Division.

Division in algebra is the process of finding one of two factors that produce a quantity, when one factor and the product are given.

The product of the two factors is the dividend. The divisor is the given factor, and the quotient is the required factor.

Division is the converse of multiplication; the dividend being the product; the divisor being one of the two factors of the dividend. Consequently the laws governing the exponents and signs can be deduced from the knowledge obtained in studying multiplication.

If we add the exponent of the multiplier to the exponent of the multiplicand to find the exponent of the product, we must subtract the exponent of the divisor from the exponent of the dividend to find the exponent of the quotient.

$a^2 \times a = a^3$
Then $a^3 \div a = a^2$ or $a^3 \div a^2 = a$.
$a^2 \div a^2 = a^0$
$a^2 \div a^2 = 1$, just as $4 \div 4 = 1$.
Therefore $a^0 = 1$.

Any quantity with an exponent 0 is equal to unity. The law governing the signs in division are the same as in multiplication; that is, like signs produce + and unlike signs produce —. The law may be more definitely stated by saying, make the sign of the quotient + when the divisor and the dividend have like signs. Make the sign of the quotient — when the divisor and dividend have unlike signs.

Applying laws for exponents and signs we thus solve the following:

$-63 \div 7 = -9$ $\qquad$ $63 \div -7 = -9$
$-63 \div -7 = 9 = +9$ $\qquad$ $+63 \div +7 = 9 = +9$

$72a^4 \div 8a = 9a^3$ $\qquad$ $-72a^2 \div -3a = 24a$
$-72a^3 \div 6a^2 = -12a$ $\qquad$ $72a^5 \div -12a^2 = -6a^3$

To divide a polynomial by a monomial:

$3a)\,9a^2 - 6a$ $\qquad$ $-3a)\,9a^2 - 6a$
$\quad 3a - 2$ Quotient. $\qquad$ $-3a + 2$ Quotient

$-4x^2y)\,8x^4y^2 - 12x^3y^2 - 16x^2y$
$\quad -2x^2y + 3xy + 4$ Quotient.

To divide one polynomial by another:

$a^2 + 2ab + b^2)\,a + b$ Divisor
$a^2 + ab \qquad a + b$ Quotient
$\quad ab + b^2$
$\quad ab + b^2$

Explanation: a, the first term of the divisor is contained in a^2 the first term of the dividend $+a$ times. This becomes the first term of the quotient. Multiplying the divisor, $a+b$, by a, the first term of the quotient, we obtain the quantity a^2+ab. We subtract this from the dividend and have for a remainder $ab+b^2$. This may be called the new **dividend:** a, the first term of the divisor, is contained in ab, the first term of the new dividend, $+b$ times. Then $+b$ becomes the second term of the quotient. Multiplying the divisor $a+b$ by $+b$, we obtain the quantity $ab+b^2$. Subtracting this quantity from the new dividend we have no remainder.

By applying the same steps we solve the following problems:

$$\begin{array}{lll}
\text{Dividend} & a^2-2ab+b^2)\,\underline{a-b} & \text{Divisor} \\
 & \underline{a^2-\ ab}\qquad a-b & \text{Quotient} \\
 & \quad -ab+b^2 & \\
 & \quad \underline{-ab+b^2} &
\end{array}
\qquad
\begin{array}{lll}
\text{Dividend} & a^3-b^3)\,\underline{a-b} & \text{Divisor} \\
 & \underline{a^3-a^2b}\ \ a^2+ab+b^2 & \text{Quotient} \\
 & \quad a^2b-b^3 & \\
 & \quad \underline{a^2b-ab^2} & \\
 & \qquad ab^2-b^3 & \\
 & \qquad ab^2-b^3 &
\end{array}$$

$$\begin{array}{lll}
\text{Dividend} & 6x^2-23xy+20y^2)\,\underline{3x-4y} & \text{Divisor} \\
 & \underline{6x^2-\ 8xy}\qquad 2x-5y & \text{Quotient} \\
 & \quad -15xy+20y^2 & \\
 & \quad \underline{-15xy+20y^2} &
\end{array}$$

$$\begin{array}{lll}
\text{Dividend} & 6a^2+29a+35)3a+7 & \text{Divisor} \\
 & \underline{6a^2+14a}\qquad 2a+5 & \text{Quotient} \\
 & \qquad 15a+35 & \\
 & \qquad \underline{15a+35} &
\end{array}$$

$$\begin{array}{lll}
\text{Dividend} & 10a^3+33a^2-52a+9)\,\underline{5a-1} & \text{Divisor} \\
 & \underline{10a^3-\ 2a^2}\qquad 2a^2+7a-9 & \text{Quotient} \\
 & \qquad 35a^2-52a+9 & \\
 & \qquad \underline{35a^2-\ 7a} & \\
 & \qquad\quad -45a+9 & \\
 & \qquad\quad \underline{-45a+9} &
\end{array}$$

Equations Containing Two or More Unknown Quantities.

$x+4=19$. By subtracting 4 from each side of this equation, we have $3x=19-4$, or $3x=15$, $x=5$. In the equation $3x+y=19$, we can not find the value of x because we do not know the value of y.

However, if we have two equations containing x and y and x has the same value in each equation, and y has the same value in each equation, we can combine these two equations in such a manner as to cause one of the unknown quantities to disappear. This process is called elimination, and such equations are said to be simultaneous.

DEFINITION: *Simultaneous equations* are those in which the same unknown quantity has the same value in each equation.

Elimination is any process of deducing from two or more simultaneous equations, a single equation containing but one of the unknown quantities.

There are four methods of elimination which most books on algebra call three, viz., addition, subtraction, comparison and substitution. Addition and subtraction are treated as one method by most authors. We will first treat of elimination by addition and subtraction.

Addition. No problem can be solved by addition unless one of the unknown quantities has unlike signs.

$$\text{Solve}\quad \begin{cases} x+y=11 & (1) \\ x-y=\ 3 & (2) \end{cases}$$

By adding the two equations we have

$2x=14.$ (3)
$x=7.$ (4)

The unknown quantity y disappears because the sum of $+y$ and $-y$ is 0. Knowing the value of x is 7, we write equation one (1) by putting 7 in place of its equal, which is x, and the equation becomes

$7+y=11.$
$y=11-7.$
$y=4.$

Solution of the same problem by *Subtraction.*

Solve $\begin{cases} x+y=11. \\ x-y=3. \end{cases}$ (1) (2)

By subtracting equation (2) from equation (1) we have

$2y=8.$ (3)
$y=4.$ (4)

Knowing the value of y is 4, we write equation (1) putting 4 in place of its equal y and the equation becomes

$x+4=11.$
$x=11-4.$
$x=7.$

ELIMINATION BY COMPARISON. In order to understand this method we must see that the student knows the meaning of the axiom: Things equal to the same thing are equal to each other. Illustration: $2\times6=12$. $3\times4=12$. Then $2\times6=3\times4$. If we know two values of x, then we know that these two values are equal to each other.

Solve by comparison $\begin{cases} x+y=11. \\ x-y=3. \end{cases}$ (1) (2)
By transposing y in (1) $x=11-y.$ (3)
By transposing y in (2) $x=3+y.$ (4)
By axiom $3+y=11-y.$ (5)
Transposing $y+y=11-3.$ (6)
Collecting $2y=8.$ (7)
$y=4.$ (8)
Substituting y in (1) $x+4=11.$ (9)
Transposing $x=11-4.$ (10)
$x=7.$ (11)

ELIMINATION BY SUBSTITUTION.

Solve by substitution $\begin{cases} x+y=11. \\ x-y=3. \end{cases}$ (1) (2)
Transposing y in (2) $x=3+y.$ (3)
Substituting x in (1) $3+y+y=11.$ (4)
Transposing $y+y=11-3.$ (5)
Collecting $2y=8.$ (6)
$y=4.$ (7)
Substituting y in (1) $x+4=11.$ (8)
Transposing $x=11-4.$ (9)
$x=7.$ (10)

Solve by addition or subtraction $\begin{cases} 3x+2y=26. & (1) \\ x+3y=18. & (2) \end{cases}$

Multiplying (2) by 3 $\quad 3x+9y=54. \quad (3)$

Subtracting (1) from (3) $\quad 7y=28. \quad (4)$

$y=4. \quad (5)$

Substituting y in (2) $\quad x+12=18. \quad (6)$

$x=18-12. \quad (7)$

$x=6. \quad (8)$

Why can not this problem be solved by addition? Answer—Because all the signs are like signs. It can be solved by comparison or substitution.

Find the value of x and y. $\begin{cases} 2x+4y=28. & (1) \\ 3x-2y=26. & (2) \end{cases}$

Multiplying (2) by 2 $\quad 6x-4y=52. \quad (3)$

Adding (1) and (3) $\quad 8x=80. \quad (4)$

$x=10.$

Substituting x in (1) $\quad 20+4y=28. \quad (5)$

$4y=8. \quad (6)$

$y=2.$

Can the problem be solved by subtraction? Yes, by multiplying (1) by 3 and (2) by 2. The same problem may be solved by addition by first dividing (1) by 2 and then proceeding as above.

Solve the following by addition or subtraction:

$\left.\begin{array}{l} 3x+y=10. \\ 2x-y=5. \end{array}\right\}$ Ans. $x=3. \quad y=1.$

$\left.\begin{array}{l} 9x+2z=63. \\ 4x-z=11. \end{array}\right\}$ Ans $x=5. \quad z=9.$

$\left.\begin{array}{l} 2x+y=12. \\ 4x+3y=27. \end{array}\right\}$ Ans. $x=4\frac{1}{2}. \quad y=3.$

$\left.\begin{array}{l} y-2z=1. \\ 4y-z=39. \end{array}\right\}$ Ans. $y=11. \quad z=5.$

Solve by comparison $\begin{cases} 3x+2y=30. \\ x+y=11. \end{cases}$

$3x+2y=30. \quad (1)$

$x+y=11. \quad (2)$

Transposing (1) $\quad 3x=30-2y. \quad (3)$

Then, $\quad x=\dfrac{30-2y}{3}. \quad (4)$

Transposing in (2) $\quad x=11-y. \quad (5)$

Then, $\quad \dfrac{30-2y}{3}=11-y. \quad (6)$

Clearing of fractions $\quad 30-2y=33-3y. \quad (7)$

Transposing $\quad 3y-2y=33-30. \quad (8)$

$y=3. \quad (9)$

Substituting y in (2) $\quad x+3=11. \quad (10)$

$x=8. \quad (11)$

Solve the following by comparison:

$\left.\begin{array}{l} 4x+3w=29. \\ 2x-w=2. \end{array}\right\}$ Ans. $x=3\frac{1}{2}. \quad w=5.$

$\left.\begin{array}{l} 4v-2t=32. \\ 3v+3t=60. \end{array}\right\}$ Ans. $v=12. \quad t=8.$

$$\begin{array}{lrr}
\text{Solve by substitution} & \begin{cases} x+3y=22. \\ 3x-y=6. \end{cases} & \begin{matrix}(1)\\(2)\end{matrix} \\
\text{Transposing (1)} & x=22-3y. & (3) \\
\text{Multiplying by 3,} & 3x=66-9y. & (4) \\
\text{Substituting 3x in (2)} & 66-9y-y=6. & (5) \\
\text{Transposing,} & -9y-y=6-66. & (6) \\
\text{Collecting,} & -10y=-60. & (7) \\
\text{or} & 10y=60. & (8) \\
 & y=6. & (9) \\
\text{Substituting y in (2)} & 3x-6=6. & (10) \\
 & 3x=6+6. & (11) \\
 & 3x=12. & (12) \\
 & x=4. & (13)
\end{array}$$

Solve the following by substitution:

$\left.\begin{array}{r} 2x-y=16. \\ 5x+2y=67. \end{array}\right\}$ Ans. $x=11.$ $y=6.$

$\left.\begin{array}{r} 5v+2w=31. \\ 2v+3w=30. \end{array}\right\}$ Ans. $v=3.$ $w=8.$

$\left.\begin{array}{r} 4y-z=1. \\ 10y+2z=25. \end{array}\right\}$ Ans. $y=1\frac{1}{2}.$ $z=5.$

Solution of simultaneous equations containing three unknown quantities.

$$\begin{array}{lrr}
\text{Solve} & \begin{cases} 4x-y+2z=27. \\ x+2y-z=3. \\ 2x+3y+4z=61. \end{cases} & \begin{matrix}(1)\\(2)\\(3)\end{matrix} \\
\text{Multiplying (2) by 4} & 4x+8y-4z=12. & (4) \\
\text{Subtracting (4) from (1)} & -9y+6z=15. & (5) \\
\text{Multiplying (2) by 2} & 2x+4y-2z=6. & (6) \\
\text{Subtracting (3) from (6)} & y-6z=-55. & (7) \\
\text{Adding (7) and (5)} & -8y=-40. & (8) \\
 & y=5. & (9) \\
\text{Substituting y in (7)} & 5-6z=-55. & (10) \\
\text{Transposing} & -6z=-55-5. & (11) \\
\text{Collecting} & -6z=-60. & (12) \\
 & z=10. & (13) \\
\text{Substituting y and z in (2)} & x+10-10=3. & (14) \\
 & x=3. & (15)
\end{array}$$

Solve by any process.

$\left.\begin{array}{r} 2v+2t-2w=6. \\ v-t+3w=23. \\ 4v+t-w=21. \end{array}\right\}$ Ans. $v=6.$ $t=4.$ $w=7.$

$\left.\begin{array}{r} 3x+y-3z=26. \\ 4x-2y-4z=18. \\ x+2y+5z=29. \end{array}\right\}$ Ans. $x=9.$ $y=5.$ $z=2.$

Problems involving two unknown quantities.

The sum of two numbers is 10; their difference is 2. What are the numbers? Ans. 4 and 6.

Divide 60 into parts such that the greater shall equal three times the less. Ans. 45 and 15.

Divide 72 into two parts such that ⅔ of the greater shall exceed ⅚ of the less by 3. Ans. 42 and 30.

If A gives B \$10, B will have 2½ times as much money as A; but if B gives A \$10, A will have 1⅓ times as much money as B. How much money has each? Ans. A has \$30. B has \$40.

Domestic Economy

Industry sweetens our enjoyments, and seasons our attainments with delightful relish.—*Barron*

DOMESTIC ECONOMY is the science which treats of the skillful and economical management of the affairs in the home. It is based upon practical trial and our knowledge of the sciences, requiring both the actual experience in conducting and managing household affairs and a systematic study of the elements which make up the foods useful to man.

Primarily the household was managed in a simple manner, sometimes by very crude and unskillful methods, especially in households and in countries where the implements employed and the foods used were few, or the foods were limited to the productions within a particular section of the country. At that time the materials used for food were not only limited in number and kind, but those available were prepared for the table in only a few different ways. This gave to the household greater simplicity but limited the food supply to a very small list of nutritious articles.

In more recent times the bills of fare came to include a much larger variety of articles. This became possible because of rapid transit, enabling us to transport the food products from one section to another, bringing the productions of the tropical and warmer regions to the far distant colder sections. This vast field of transportation is only a factor in greatly diversifying the articles of food, of bringing the remote sections near to each other as it were, but a careful study of different foods as related to the requirements of the body has enabled us to prepare for the table in a great variety of ways the different products that are available in the household. For instance, at one time potatoes were served [illegible] and later by boiling, but now there are very many ways of preparing and serving this product. What is true of potatoes is true of every article of food, the [illegible] methods and utensils making it possible to serve inexpensively and yet in a variety of ways the standard foods, rendering them both beautiful to the eye and appetizing and nutritious to the body.

Health of First Consideration.

Domestic science places health as the first and most important element to be considered. Comfort and prosperity come to the household only where good health is enjoyed, although the wise use of money in the home is an important element in securing both comfort and prosperity. For this reason we must base the management of the home upon a strict observance of hygienic laws, letting this be a guiding principle in all we do, at the same time keeping in mind the wise use and economic expenditure of money and the prudent employment of the articles of food, apparel and furnishings which are purchased for the household.

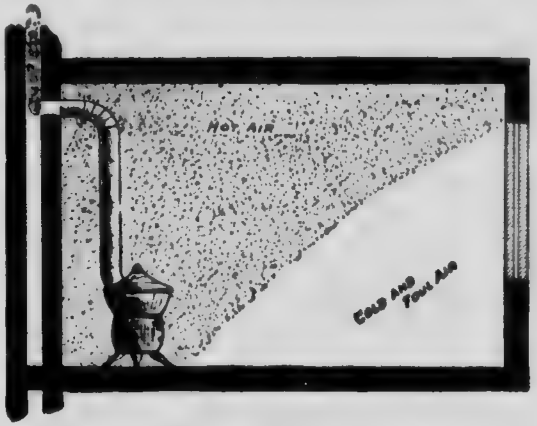
Food is of course an essential to be considered, what we provide for the inner man, but we must be discriminating in selecting the most suitable varieties and in preparing and using them so they will be wholesome and digestible. This is very necessary in promoting the health, happiness and contentment of the home. Every article purchased must be useful for some purpose and its application must be judicious. In this sense domestic economy enables us both to save money and to spend it wisely. However, the income of the head of the family and the general environments of the household must be considered in determining what the expenditures should be, keeping always in mind that waste and extravagance are unwise and injudicious under all circumstances.

Heat, Ventilation and Clothing.

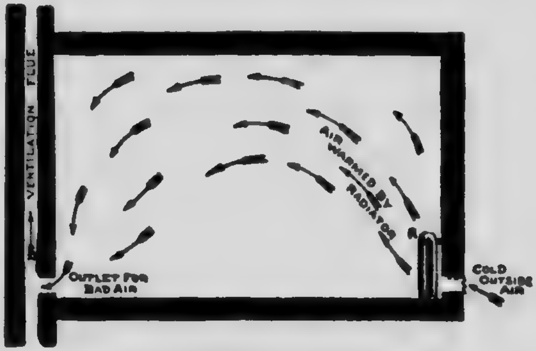
HEAT. The normal temperature of the human body is between 98° and 99° Fahrenheit, varying very little, and it is important to maintain uniformity in the temperature of the home. Healthy adults require less heat than either children or old people, but in all cases the temperature can be a little lower if the individuals move about than when they sit still. The atmosphere within doors as a general rule may be maintained at from 60° to 65°, unless the occupants sit still, as in the school room, in which case the temperature should be from 65° to 70°. In old people and invalids the vital processes of the body proceed more gradually and they cannot take necessary exercises for maintaining the vital heat, hence they require more warmth than the average healthy adult. In children the relative amount of surface whereby the body loses heat is greater than in adults, hence the heat radiates more rapidly from the body. Even in healthy adults there is a difference in the requirements and for this reason the different rooms, such as the living room, dining room and bedrooms, should have heating facilities to suit their needs. The average degree of heat required for the different rooms should be ascertained and a thermometer should be provided so as to enable those having charge to regulate and obtain uniformity.

Power to regulate its own temperature is possessed by the human body. When the outer air is quite cold, then the body consumes more food and relatively more heat is produced to maintain the temperature. On the other hand, if the outer air is extremely warm, a relatively larger amount of blood is carried to the surface of the skin and the perspiration which is secreted passes to the surface of the body, where it evaporates, causing a lowering of the temperature to maintain the normal heat of the body. It will be seen that both of these processes are wasteful and that they consume the food and energy which are required for other purposes. As a rule, the excessive variations in temperature cause a weakening of the system, owing to the fact that in either case they demand an extra amount of food and make greater demands upon the digestive organs, but leave less of the vitality of the food to build up brain energy. When the changes of temperature are extremely sudden and the body is not properly protected by clothing, the vitality is overtaxed and the individual is afflicted by what is commonly called "catching a cold."

VENTILATION. The object of ventilation is to supply pure air indoors. This is necessary because the processes of life as well as the confinement of a given quantity of air within a room operate to contaminate the air by diminishing the oxygen and increasing the nitrogen. The two processes of ventilation are to remove foul air and supply an equal amount of pure air. In a larger sense they include the removing or dilution of impurities, the regulation of moisture and the cooling or warming of the air Ordinary ventilation in the home has no effect on the quality of the air introduced, since it supplies only such air as surrounds the room or building to be ventilated, but in some instances, as in the case of some factories, the air may be filtered through meshes of wire or cotton cloth to remove particles of dust. Air is rendered impure where coal or gas are used for heating or oil and gas are employed for lighting. In some cases it is necessary to guard against air being either too dry or too moist, the former being overcome by spraying with water and the latter by employing warmth or a warm current of air for drying.



Effect of poor ventilation.



Well ventilated room.

All rooms should be properly lighted and as much sunlight as possible should be admitted. No artificial light is as wholesome as sunlight, hence the living rooms should be supplied with as much window space as possible and the amount admitted should be regulated by blinds that are easily controlled. If porches are attached to houses they should be so located and constructed that they will not obstruct sunlight from the rooms that are occupied by the family for the largest amount of time during the day.

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MILLINERY CLASS AT THE STATE TRADE SCHOOL WHERE GIRLS ARE TRAINED TO DO MANUAL WORK.

(Method Book, Opp. 483)

MECHANICAL DRAWING TAUGHT TO A CLASS OF BOYS AT THE INDEPENDENT INDUSTRIAL SCHOOL AT BEVERLY, MASS.

CLOTHING. **The kind and amount of clothing worn should be regulated** according to the season of the year. As a general rule heavier clothing and of a darker color should be worn in the winter, while the clothing in the summer time should be lighter both in weight and color. Much care should be taken in changing clothing for the reason that a sudden change of this kind will often cause sickness or lead to indisposition. Care exercised in this respect will often do much toward maintaining health and evade entirely the need of paying doctors' bills.

Materials and Repairs.

It is true economy, both in food and clothing, to buy good materials. Cheap goods and unwholesome food are often the most expensive. We should never purchase any article because it is cheap, since this is false economy, and our purchases should be made only because the articles secured are valuable and are of use to us. The advice to purchase what is both good and needful applies to all articles used in the home, no matter whether they are food, table linen, decorations, tools and utensils or clothing. In all these matters we should not be "a penny wise and a pound foolish."

Everything of the household, whether indoors or outdoors, should be kept in a good state of repair. Frequently a very small outlay to make repairs avoids a much greater expense if something needing attention is neglected. Here, too, will apply the old adage, "A stitch in time saves nine."

Practical Suggestions.

Every housewife should have a practical knowledge of foods and their values, no matter whether she is in the kitchen herself or supervises the work done by others in the kitchen. The young girl, irrespective of her station in life, should learn how to prepare and serve foods for the table in a healthful, attractive and economical manner. In fact, domestic science should be studied to the extent that all may learn the best and easiest methods of housekeeping. It should give us a scientific knowledge of foods and enable us to properly prepare and combine them so as to promote the greatest possible measure of health, contentment and domestic felicity.

Chemistry of Cooking.

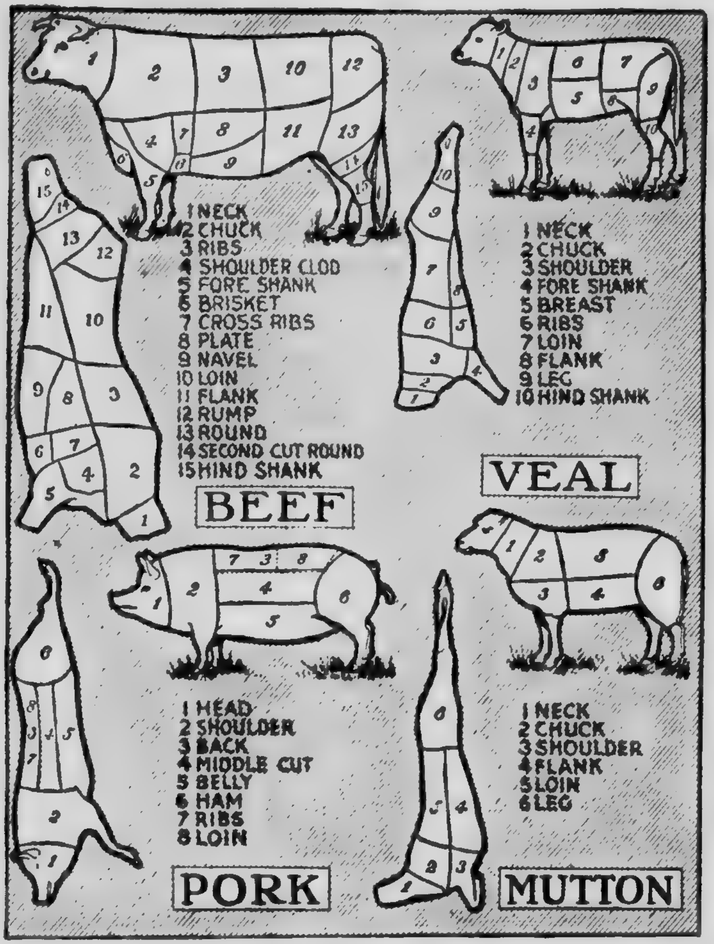
Perhaps the most important step in domestic economy is to learn the changes in the composition of foods brought about by means or application of heat. There are four very important reasons why we should cook our food:

1. To change its mechanical condition so that it may be acted upon more readily by the digestive juices.
2. To make it more palatable, which increases the flow of saliva and stimulates other digestive functions.
3. To preserve and sterilize the food and kill disease germs.
4. To increase the digestibility of many kinds of foods.

Boiling Water.

When we heat water to the boiling point it sets free gases of the atmosphe which have been held in solution in the water, such as nitrogen, oxygen an carbon dioxide. These gases are more dense in water than in the atmosphere, hence when we boil the water they expand and escape in the atmosphere, producing the bubbles which rise to the surface.

Water not only holds gases in solution, but likewise contains many dissolved mineral substances and bacteria and other organic matter. By boiling the water numerous harmful organisms or bacteria are killed and in that condition are rendered less injurious to health.



Cuts of Meat.

Meat will cook as quickly in a boiler with a small fire, though large enough to keep the water boiling, as it will if there is a raging fire and intense he under it, unless the pot is covered and the steam becomes superheated. The small fire will do the best class of cooking because it will leave the meat m tender and juicy. The reason for this is that violent boiling causes the tissu to be ruptured and torn and removes the juices.

Water cannot be heated beyond the boiling point, which is 212° Fahrenheit at sea level, but it is lower as the altitude increases.

Cooking Meat.

The pleasing odor of cooking meat is due to the decomposition of fat and tissues. It is not necessary to heat water to the boiling point to coagulate the albumen. When fats are strongly heated they break up into fatty acid and glycerin. Fats that are subjected to high heat become granular when cooled, as, for instance, fried bacon. Cooking lessens the weight of meat and animal foods and in some cases diminishes the ease of digestion, which is true of oysters. It causes the water in meat to evaporate and permits the escape of juices and loss of fats.

In boiling meat to make broth, it should first be placed in cold water. This dissolves the albumen, flavoring matter and organic salts, producing small quantities of lactic acid, which acts upon the tissues of the meat and resolves it into a soluble form. At 134° temperature Fahrenheit albumen coagulates; at 160° it becomes a clear brownish scum. Greater heat converts the connective tissues into gelatin.

The longer meat is boiled the less nutritive it becomes, but the broth is made more wholesome. If the object is the meat instead of the broth, it is better to plunge the meat into boiling water at the start. This coagulates the albumen on the surface and prevents the escape of the juices. It should be kept in boiling water about ten minutes and then the temperature should be lowered to about 180° Fahrenheit. It should then be allowed to cook until it is tender. The water should cover the meat and should be replenished with boiling water.

Stewing Meat.

To stew meat, first place it in cold water to extract the juices and flavoring materials. The temperature of the water should be gradually raised to 180° Fahrenheit and kept at that point for several hours. Long stewing coagulates the albumen and makes the fibers dryer and firmer. The substances extracted from meat may be divided into three classes.

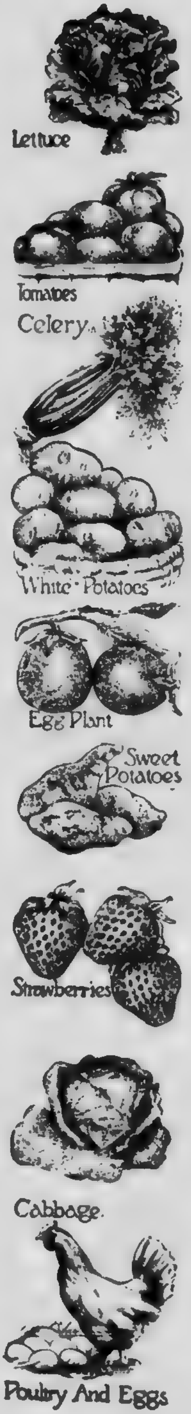
1. Meat extracts contain no gelatin, fat or albumen, hence have no food value. They are merely stimulants.
2. Preserved meat juices are obtained by pressure.
3. Predigested foods are obtained from meat by artificial digestion.

Suggestive Outline on Cooking.

I. EFFECTS OF HEAT AND COOKING.
  1. To change mechanical condition.
  2. To improve flavor and taste.
  3. To sterilize food and kill bacteria.

II. BOILING WATER.
  1. Temperature of boiling water (212° Fahrenheit).
  2. Reason and phenomena for bubbles.
  3. Mineral matters; why removed by boiling.
  4. Time required to boil food in water, such as eggs.
  5. Kills bacteria.
  6. Effects: a, On meats; b, On vegetables.

III. MEATS.
  1. Boiling: Odor and taste.
  2. Action and results.
    a. Softens protein contents.
    b. Excessive cooking coagulates and hardens the albumen.



   - c. Breaks up the fats.
   - d. Forms fatty acids and glycerin.
   - e. Lessens the weight of meat.
   - f. In most cases decreases the ease of digestion.

3. How to make broth.
   - a. Place in cold water.
   - b. Action of the cold water.
   - c. Effects of increasing temperature.
      1. Albumen coagulates at 134° Fahrenheit.
      2. Albumen rises as a scum at 160° Fahrenhei
   - d. Effect of long boiling: Improves the broth.

4. How to boil meat.
   - a. First plunge into boiling water and boil for te minutes.
   - b. Lower the temperature to about 180° and bo from one to three hours, depending upon th kind of meat.
   - c. Fish should not be plunged into boiling wate because the motion of the water tends to brea the fish up into small parts.

5. How to boil where both broth and meat are to be use
   - a. First—Place in cold water in order to extra juices and flavoring extracts.
   - b. Second—Slowly raise temperature to 180° an keep at this temperature for some hours.
   - c. Effects of higher temperature on connective ti sues, albumen and fibrin.
   - d. Meat extracts.
      1. True meat extracts contain no gelatin, fat albumen.
      2. Preserved meat juice is obtained by pressu
      3. Predigested foods are obtained by artifici digestion.

6. Roasting meats.
   - a. Difference between roasting and boiling.
   - b. Loss of weight.
      1. Due to what? (Evaporation.)
      2. How checked? (By frequent basting.)
   - c. Fire required.
   - d. The smaller pieces require somewhat greater h Why? (To prevent the drying up of the juice

7. Broiling meats: A quick method of roasting.
   - a. Method: First place on intensely hot surface
   - b. Reason: To coagulate the albumen and prevent escape of the juices.

8. Frying meats and vegetables.
   - a. How different from other methods.
   - b. Aims in frying vegetables.
      1. To soften and rupture the cellulose framework.
      2. To gelatinize the grain starches.
      3. To remove the cellulose covering of cells that the digestive juices may act m readily.

IV. BAKING BREAD, PASTRY AND CAKES.

1. Object: To make materials more porous so that the digestive juices may act more freely.
2. The dough.
3. The leaven (usually yeast or baking powder).
   - A. Object: To raise the dough.
   - B. Effects.
     - a. Produces carbon dioxide. (This gas acts similar to steam.)
     - b. Causes fermentation of starch, producing alcohol.
     - c. Baking drives off the alcohol.

V. COOKING VEGETABLES.

1. Boiling.
   - A. Selection and value of vegetables.
   - B. Condition of green vegetables to cook.
   - C. How boil herbaceous varieties.
   - D. How boil roots and tubers. Reason why?
   - E. Why add baking soda in boiling vegetables that are a trifle old?
   - F. Increase of weight in boiling.
   - G. Blanching: a, Object of; b, Results; c, Time required.
   - H. Seasoning and finishing cooking.
   - I. Losses in cooking.
     - a. Potatoes with the peeling on (very little).
     - b. Potatoes peeled (50 per cent of mineral matter).
     - c. Carrots and other vegetables.
   - J. Effects.
     - a. Vegetable cellular tissue (softened).
     - b. Nitrogenous matter (coagulates).
     - c. Starch granules (absorb moisture, swell and burst).
     - d. Flavors are developed.
     - e. Above 125° the above changes begin.
     - f. Gases are developed and odors escape.
   - K. How cook vegetables and cereals.
     - a. Potatoes (Irish and sweet potatoes).
     - b. Turnips, cabbage, squash, beans, peas, apples, etc.
     - c. Cereals: Object in cooking.
       1. To break starch granules, thereby dissolving and gelatinizing the starch.
       2. To sterilize the material.
       3. To improve the flavor.
       4. To make the food more easily digested.
     - d. Long, slow cooking is better than rapid cooking.

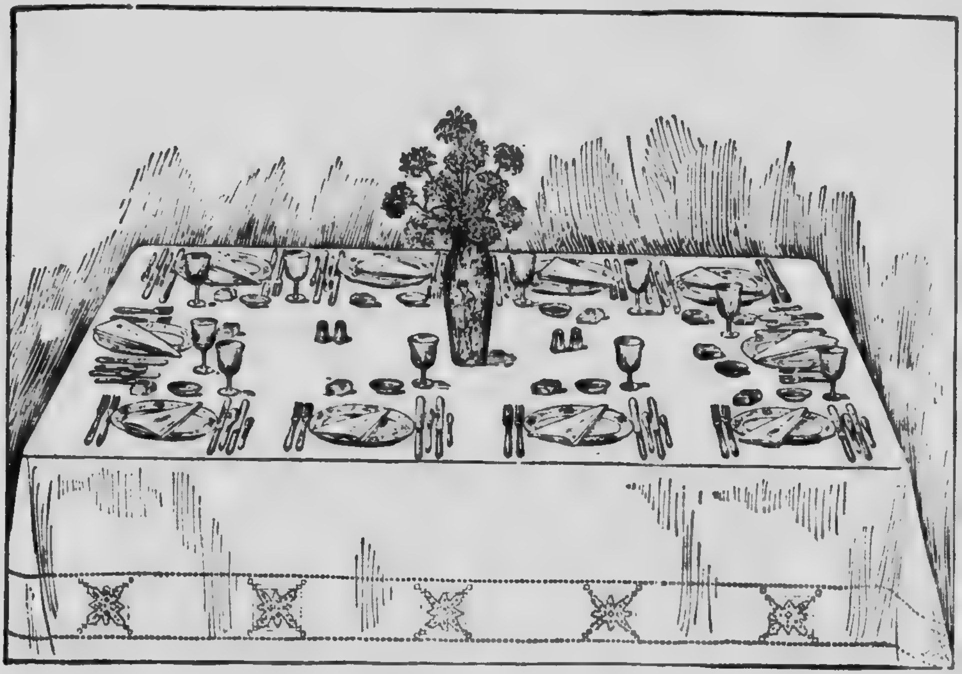
The Kitchen.

The kitchen should be kept as orderly and with as much system as any room in the house. There should be a place for everything and all the utensils, when thoroughly cleaned after using, should be placed where they belong. Modern kitchens have hooks, shelves and cabinets to receive all the utensils, includin ladles, kettles and pots.

Recent reports of health officers show that disease is frequently carried by flies, hence they and other insects should not be permitted to infest the kitchen Borax sprinkled on the floor and shelves at night will cause roaches to leave and ants are exterminated by using sage. Separate places should be provided fo brushes, brooms, mops and wash rags.

The Dining Room.

Cleanliness and order in the dining room is a matter of pride to the correct housekeeper. All the dishes and table utensils should be cleaned after the meal to prevent them from tarnishing and to have them ready for the next servic



The Breakfast Table—How to Set It.

If the table is laid some time before the meal, the plates, cups and glasses shoul be turned to prevent dust and insects from getting into them.

It is a mark of thoughtfulness and attention to place the napkins and dishe on the table at the proper time before beginning a meal. A pitcher of wate is always in order at this time. The victuals should not be placed on the tabl too soon but they should be served at the beginning of the meal, thus preventin them from becoming cold or stale before eating.

It is well to have a regular time for each meal of the day and each memb of the family should be ready at this time. The service of the meal, when it ready and all are prepared for it, becomes a pleasant pastime. A cluster of fresh flowers gracefully arranged and fruit in season contribute much to the pleasure of the meal.

How and What to Eat.

At meal time all the cares of business should be forgotten and the attention should be directed to the selection of such food as is served. Only the quantity that will be eaten should be served to or be taken by any one. It is better to ask for a second helping than to take more on the plate than can be eaten. All classes of food should be well masticated so as to mix them thoroughly with saliva. Those who will violate this well understood requirement cannot fail to impair their health.

The substances used for food may be classified in three groups, but it must be remembered that each group consists of a large variety of articles which are more or less healthful or nutritious to the body. These groups consist of minerals, proteins and compounds which contain no nitrogen. This is a practical subdivision and will answer the purpose in general housekeeping.

Mineral foods embrace substances which contain nitrogen as well as some which contain no nitrogen. Of these water is the principal food substance. In fact, all substances used for food contain water, the percentage ranging from 10 to 95. Every portion of the human body contains more or less water, the percentage of water in the body being from 66 to 75 per cent. Other minerals include iron, lime, soda and salt.

The *proteins* may be classified as albuminoids, gelatinoids and extractives. These are all very important foods and in some forms are necessary to sustain life. Such foods as the gluten of wheat, the lean part of meat, the casein of milk and the white of an egg are among the important albuminoids. Gelatin is a typical form of the gelatinoids. These foods are digested easily. Extractives, such as beef tea, are much used for invalids and are obtained by pressure or by soaking meat in water at a temperature of 165° Fahrenheit.

The food substances which do not contain nitrogen include the two classes known as hydrocarbons and carbohydrates. The hydrocarbons are the heat-producing foods and include the oils and fats derived from animals and vegetables. Carbohydrates supply energy to the body, including some animal heat, and embrace sugar, starch and other substances of vegetable origin.

It has been determined by a long line of scientific investigation that the human body requires daily about one and three-fourth ounces of protein, about one and three-fourth ounces of fat and about sixteen ounces of carbohydrate foods. This may be explained more clearly by saying that these quantities of food are found in five and one-half ounces of beef, one and three-fourth ounces of butter, seven ounces of potatoes and eighteen ounces of bread. These elements are of course found in varying proportions in other fields and it does not follow that the same foods should be taken continuously. On the other hand, variety is the spice of life in eating as well as in all things essential to the body and mind.

Average Time Required for Cooking.

It is difficult to prescribe the exact time that food should be cooked, owing to the fact that size and age of the commodities as well as climatic and other conditions influence very materially. The following is a table that can be followed under ordinary circumstances:

Boiling.

	HRS.	MIN.
Asparagus		20
Beans, Lima		35
Beans, navy	2	
Beans, string		25
Beef, corned		30
Beef, potted		35
Beef, smoked		20
Beef, fresh, per pound		35
Beets		35
Brussels Sprouts		10
Cabbage		20
Cauliflower		20
Carrots, young		50
Chicken		15
Corn, green		10
Fish—		
Bass, Bluefish, Salmon and other oily fish, per pound		10
Codfish, Haddock, Halibut, Pike, Whitefish, per pound		6
Crawfish		15
Lobster		30
Fowl		25
Ham		15
Lentils	2	
Macaroni		20
Mutton		15
Onions		35
Parsnips		35
Peas		15
Peas, dried	2	
Pork, salt		20
Potatoes		25
Rice		15
Spaghetti		20
Spinach		15
Turkey		15
Turnips		30

Roasting.

	MIN.
Beef, ribs, per pound	9 to 12
Beef, round, per pound	10 to 16
Chicken, per pound	12 to 15
Duck or Goose, per pound	18 to 20
Fillet of Beef	30
Fish, large	50 to 60
Fish, small	15 to 25
Game birds, large	30 to 40
Game birds, small	15 to 25
Ham, per pound	20
Lamb, per pound	12 to 15
Mutton, leg, per pound	12 to 15
Mutton, saddle, per pound	10 to [illegible]
Pork and Veal, per pound	20
Turkey, per pound	12 to 15
Venison, per pound	10 to 12

Broiling.

	MIN.
Beefsteak, 1 in. thick	10 to 12
Beefsteak, 1½ in. thick	12 to 16
Bluefish, Shad or Trout	20 to 25
Chicken, spring	15 to 20
Fish, small	8 to 12
Game birds	8 to 15
Lamb chops	8 to 10
Mutton chops	10 to 12
Pigeons	10 to 15

Baking.

	HRS.	MIN.
Biscuits		20
Bread, white	1	
Bread, rye, graham, etc.	2	

	HRS.	MIN.
Cake	1 to 1½ hrs.	
Cakes, small		20 to 50 min.
Custard	1 hr.	

Questions.

Define domestic science. What can you say of its advancement?

By illustration compare the primitive methods of cooking with the present. Why should women study domestic economy?

How does the cost of living in a home where scientific cooking and management are observed compare with that of a home where they are not observed?

Why is health given such a prominent place in this study? What is the normal temperature of the body? The average temperature of a room should be how many degrees?

What advantage is there in ventilating a room through opening a window at the top? How can the air of a living room or office be supplied with the necessary amount of moisture? 2520.

Of what special value is sunshine in the house? Why should rules of sanitation be rigidly enforced?

What is the most economic rule in purchasing food and clothing? 2009.

Contrast the importance of repair work by nature and by people.

State some reasons for cooking food. Is cooked food always more digestible than raw food? Why is boiled water most pure?

Explain how to make broth; how to make soup; how to stew meat. Why are roasted and baked foods generally most wholesome?

What effect has leaven in bread? How long should bread be baked? Why is warm bread considered unwholesome? 365.

Name the chief mineral foods. Which two seem most valuable?

Why are flies considered a pest? What means should be employed to exterminate flies, ants and roaches?

Describe a modern kitchen. Name some of the latest improvements for the kitchen.

State the amount of food elements required by the human body daily and how these may be supplied. What benefits are derived from variety in foods?

Which is the most perfect of all foods? What is the food value of milk? 1027.

Define albuminoids, gelatinoids and extractives and tell how each is obtained.

Give a number of suggestions for comfort and cheer in the dining room.

The Home in Literature.

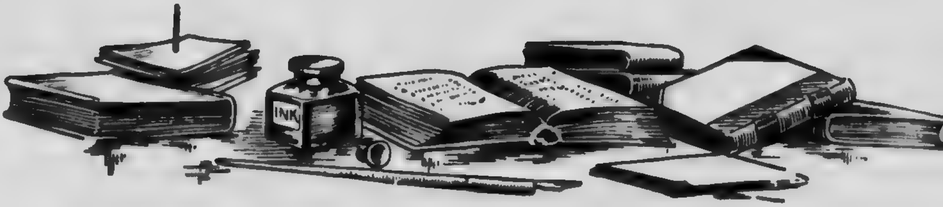
Beware of little expenses; a small leak will sink a great ship.—*Franklin.*

'Mid pleasures and palaces though we may roam,
Be it ever so humble there's no place like home.
—*Payne.*

Houses are built to live in more than to look on; therefore let use be preferred before uniformity, except where both can be had.—*Bacon.*

Nothing lovlier can be found
In woman, than to study household goods,
And good works in her husband to promote.
—*Milton.*

May not taste be compared to that exquisite sense of the bee, which instantly discovers and extracts the quintessence of every flower, and disregards all the rest.—*Greville.*



Penmanship.

Of all those arts in which the wise excel,
Nature's chief masterpiece is writing well.
—Buckingham.

WRITING is the art of expressing thought or recording ideas on paper or other materials by means of letters and other characters. This form of expressing thought was invented as a means of communicating with people after the inhabitants of the earth became so numerous that they could not remain in close contact. The earliest kind of writing was done by signs, such as were used in the very early period of Assyria, and this class of writing is known as *ideographic*. Modern writing, such as we use, is known as *phonographic* and employs letters or signs to represent sounds or words.

The Egyptians employed the so-called *hieroglyphic* system of writing in which ideas are represented by copying objects from nature. This system is known as *picture writing* and in more recent times has been supplemented by arbitrary signs. The Japanese still employ the brush in writing and illuminate their books in gold and colors.

Business writing is now done almost exclusively by machines called *typewriters*, of which there are many kinds on the market, but bookkeeping and personal correspondence necessarily employ hand writing to a very large extent. Shorthand writing, known as *stenography*, is employed where great rapidity is necessary and is taught generally in business colleges and in many public schools.

Writing by hand is called *penmanship* from the fact that it employs a pen. The pens were formerly made entirely of the quills of birds, taken from the wings and rectrices of the tail, but now they are manufactured from steel or aluminum. The study and teaching of penmanship, sometimes called *chirography*, is one of the important branches of learning and requires a large amount of practice and exercise work.

Methods in Penmanship.

Objects: a, Legibility; b, Rapidity; c, Endurance.
Position: a, Body; b, Feet; c, Arms; d, Head.
Movements: a, Finger; b, Forearm; c, Whole arm; d, Combined finger and forearm.
System: a, Slant; b, Vertical; c, Medial.

Objects.

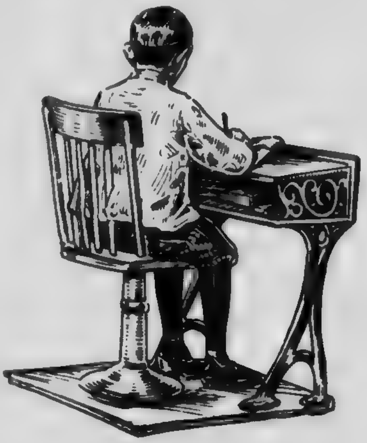
The study and practice of writing involves the three points of legibility, rapidity and endurance. To secure legibility, the student must have a correct knowledge of the forms of letters, which is best impressed upon the mind by observing and practicing on correct copy, and the muscles must be trained carefully in order to make legible the writing. After reasonable legibility is obtained, it becomes necessary to practice with the view of securing rapidity as well as mastery of movement. Students develop endurance only by much practice.

Certain forms may be employed to an advantage for the entire class, but the work must be changed or discontinued when the muscles become tired.

It must be recognized that all students acquire a tendency to write very similar to copy, or become imitators of the teacher, if they practice on specific forms throughout the course. For this reason it is quite necessary to variate the work from time to time. Ease of execution together with individuality in form are acquired if the practice work is sufficient. The matter of overcoming muscular rigidity by practice, such as closing fingers, raising and lowering arms and other calisthenic exercises, should likewise receive early attention in the course.

Position.

In order to secure correct position in writing it is necessary to have seats and desks well adapted to the size of the student. The learner should sit squarely before the desk, in an upright position, and the right elbow should rest on or near the lower right corner of the desk. The feet should rest squarely on the floor, making it necessary that the seat be fitted to the size of the student. Pupils should not be permitted to lean forward to rest their weight on the arm, but, instead, should sit upright so the arm will have entire freedom in movement.

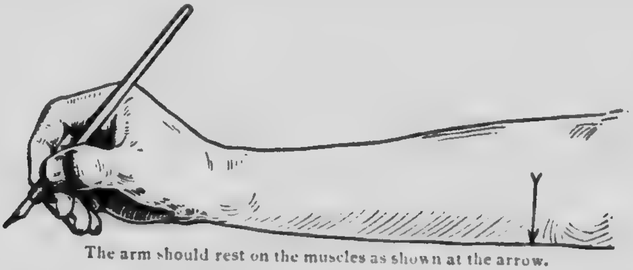


Correct Position at the Writing Desk.

Movements.

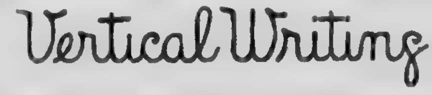
The matter of employing specific movements in teaching writing must be determined to a large extent by the instructor. Students who are easy in their movements and acquire rapidly need only a few suggestions and usually employ a combination of movements. Primary grades should acquire freedom in the *finger movement* and the *whole-arm movement*. Business writing is done most successfully by the *forearm movement*. All these movements engage to a great extent the so-called *muscular movement*, which employs particularly the muscles of the arm from the shoulder to the wrist.

In holding the pen, the arm should rest on the muscle of the forearm just below the elbow, and the wrist should be kept slightly above the paper. This will enable the hand to glide easily, the muscles of the arm serving as a pivot. Rapidity should be acquired by this exercise in the muscles of the thumb and fingers. Much practice work should be employed in addition to the regular exercises in writing.



The arm should rest on the muscles as shown at the arrow.

Systems.



The systems of writing differ somewhat. Originally the writing was vertical, this representing more nearly the printed forms, but it gradually assumed a slant form because greater rapidity i writing can be obtained by this s tem. Vertical writing, such as shown in the illustration, is mo legible but requires more time in execution, the lines being simpler and having th roundness of letter forms. *Slant writing* is now taught more generally than an other, but in some schools the *medial* form is used, being a compromise betwe the slant and the vertical. As a general rule it is advisable to teach a system quite closely in the early grades, requiring the students to reproduce exact forms, an later to permit them to develop an individuality which will give tone and cha acter to their penmanship.

Teaching Penmanship.

I. Teach the pupil to overcome muscular rigidity by giving suitable work This work must consist of such physical exercises as will employ, at differe times, all the muscles of the hand, arm and shoulder. Some pupils will ne very little while others require a great amount of these exercises, depending up how well they control the muscular movements and whether they have the nece sary endurance to keep steadily at the work during the class exercises.

II. All pupils can not be expected to hold their fingers in exactly the sa position, since the hand and fingers differ somewhat in size and constructi For this reason it is well to follow the lines of natural physical training at fi and gradually induce the learners to acquire correct habits and usage as th progress.

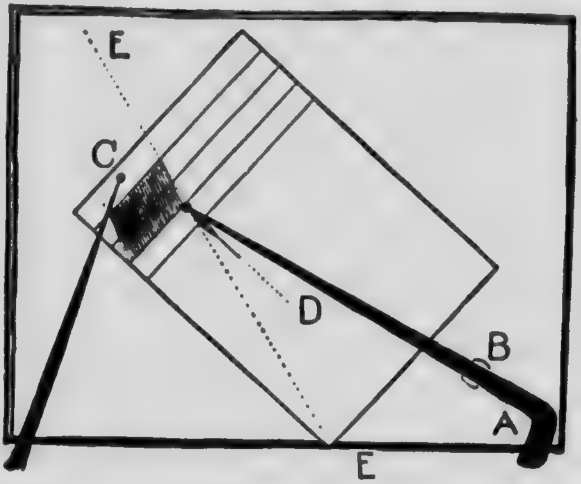
III. The first exercises in the primary grades should be with the readi lesson. Pupils should first use pencils. The form of the letters must be fixed the mind before students can be expected to write them correctly or rapidly. Pen and ink can be introduced as soon as some speed has been acquired, usuall in the second grade.

IV. Good position and correct speed should always be insisted on in all cases. Where a class is at work, all the learners should be taught to work unison and practice on the same lessons.

V. Aim to correlate movement in all written work. This can be complished only when the grade teacher, who is constantly with the pupils, studied, digested and mastered the preceding steps. An expert penman a skilled teacher of writing—giving occasional lessons in the class—would complish but little in this stage of transition from movement drill to moveme writing.

VI. Emphasize the element of speed application and movement directi in letters, parts of letters, words and connective lines. In this step, which is of the most important in its bearing upon good formation, and consequently up good writing, pupils must be taught that a line is the product of the motion us that the motion preceding the contact of the pen to the paper must be in the rection of the line to be made, and that some lines being more complex th others should be made with less speed.

VII. Strengthen in pupils the power of observation and mental conc tration as they have a bearing upon the relation of one letter to another in si slant and spacings. This is an essential and final step in teaching writing bodying extreme legibility, rapidity, ease and endurance. Pupils who have mastered this final step may secure good position and easy muscular movement all written work, but the writing is likely to be ragged and dissipated in appearance.

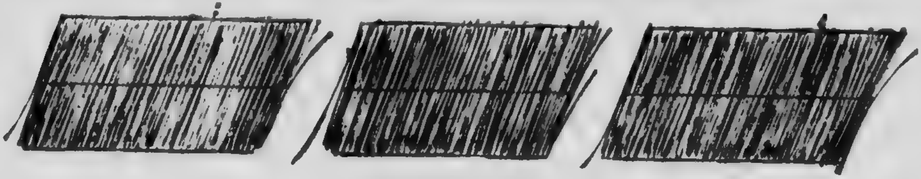


In the diagram is shown an outline of the top of a desk used in writing, giving the position of the writing paper on the desk, position of both arms, and the direction in which the pen moves to secure uniform slant. A represents the elbow of the right arm and its position on the desk; B, the muscular rest of the forearm; C, the position of the left hand; D, the penholder; E, the imaginary line along which the pen should move in making upward and downward strokes.

Exercises in Writing.

Exercise I.

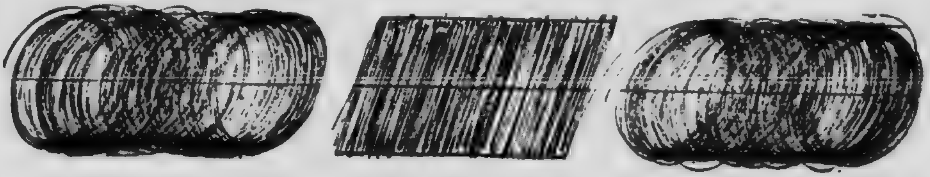
Study the exercises in this lesson carefully before the work is attempted. The closest possible attention should be given to penholding, muscular relaxation and position of the pupil. A good mental picture of the height, strokes, proportions and general appearance of these drills should be obtained by each pupil. Each section of the following illustration is made by one hundred counts:



Exercise II.

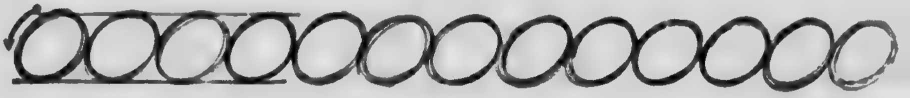
The teacher should carefully study the illustration which accompanies this exercise. Practice to count as the pupils do the work. Each downward stroke should be governed by a count and the upward stroke should not be counted. The advantages of counting are that the rapid student is held in check, the slow pupil is enlivened, and all the pupils soon learn to work in unison.

Correct speed should be acquired. The daily exercise should require a certain amount of work and this work must be done thoroughly. The second hand of a watch is a good guide in regulating the speed of the class. Count by tens as follows: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10—1, 2, 3, 4, 5, 6, 7, 8, 9, 20—1, 2, 3, 4, 5, 6, 7, 8, 9, 30, etc., continuing until one hundred or two hundred, depending on the length of the time available for the exercises. Frequently review former lessons. Practice the following drill:



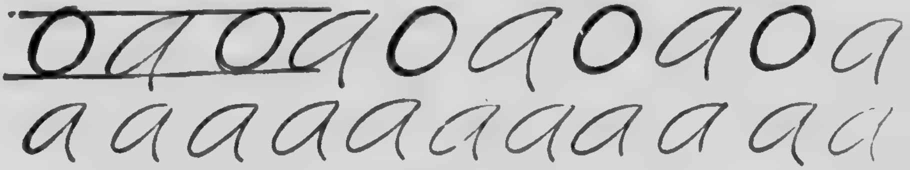
Exercise III.

In this exercise practice the compact oval. It is the repeated form of a larg capital O. The best results can be obtained only when the mind and muscle wor in perfect harmony. Study the figure carefully and see to it that the forms writt have the proper slant and correct curves are obtained. A good plan is for th teacher to observe the work and repeat, "Rounder, rounder, wider, wider," etc as the products need to be improved.



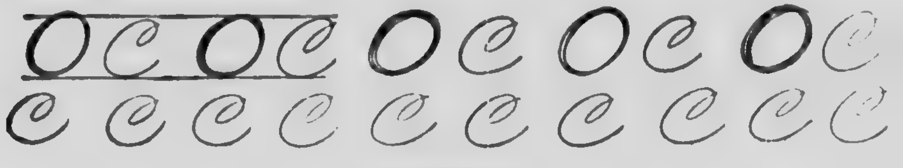
Exercise IV.

Here we begin to build the form of the capital letter A. Do not overlook counting as the pupils practice the movement. Notice the direction the pen should move, as indicated in the upper illustration. Practice this until perfect free is obtained and the muscles respond easily to the mind. After this preliminar drill, begin to produce the letter A, as shown in the second part of the illustratio



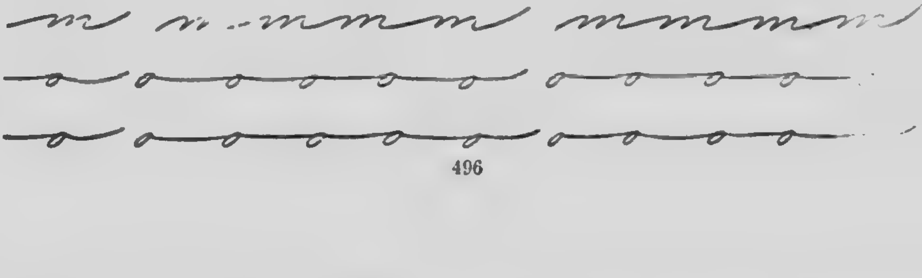
Exercise V.

Take a short time to speak about correct position of the body and arms. Open and close the fingers of the right hand; exercise the right arm by raising and lowering; see to it that all pupils hold the pen correctly. The illustrations in this exercise may serve for two or more daily lessons. In connection with them make reviews of previous lessons.



Exercise VI.

Practice is the essential element in learning to write a beautiful hand. Keep in mind the need of correctness in slant, height, size and heaviness or lightn of the lines. In this exercise are combined practice on the small letters o and Each of these should be the basis of several lessons. Aim at efficiency no matt how many days are required. Count for each downward stroke as before.



Exercise VII.

Drills on all the letters of the alphabet can be arranged by the teacher from the foregoing exercises. The students who studied and practiced the preceding carefully should be ready for any of the letters and figures.

A B C D E F F G H I

J K L M N O P Q R

S T U V W X Y Z

a b c d e f g h i j k l m

n o p q r s t u v w x y z

Exercise VIII.

The lessons suggested in this exercise are to be consecutive for several weeks, each lesson to be preceded by drill work and reviews of previous letters and movements. Students should write from fifteen to eighteen words in a minute. Frequently compare the work with the drill. Trace the capital letters at the beginning of the work in the air before putting the pen on the paper. This will impress the correct form on the mind. Combine other letters and words with the capitals given in this exercise.

Annum Annum Annum

Common Common Common

Noon Noon Noon Noon

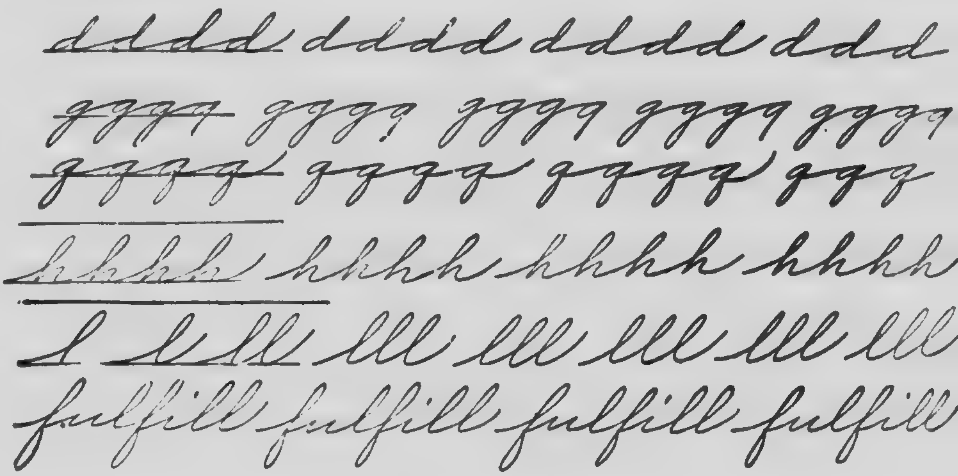
Moon Moon Moon Moon

Omen Omen Omen Omen

Humming Humming H

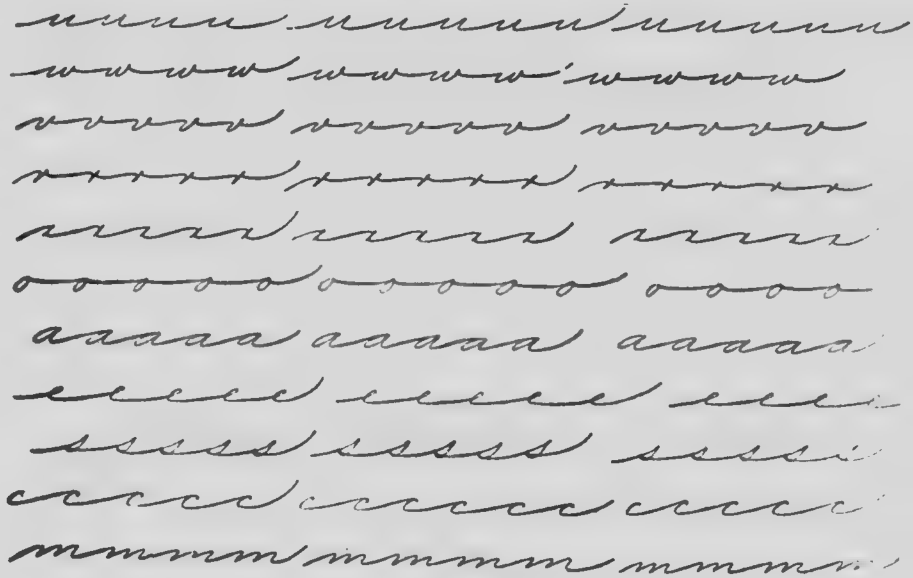
Exercise IX.

Refer to exercise VII. for an examination of the letters. Call attention to the loop or extension letters as capital J and small b, d, f, g, h, j, k, l, p, q and t. Notice the relative height and length of these letters. Exercise persistently on the following:



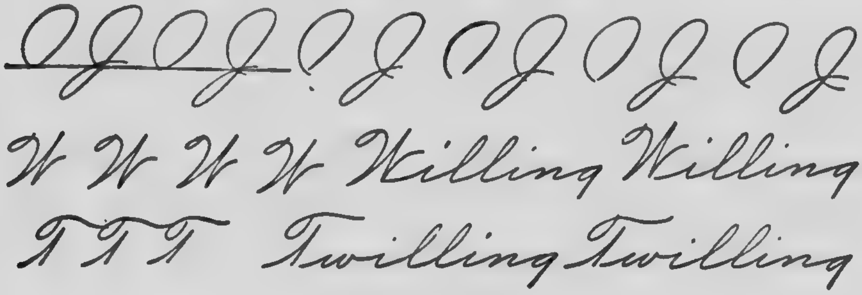
Exercise X.

Review the drill of the oval in exercise III. Frequently emphasize the right use of the eye in determining the size, form and slant of letters. The drills in this exercise may be variegated with other exercises and should occupy attention four or five days.



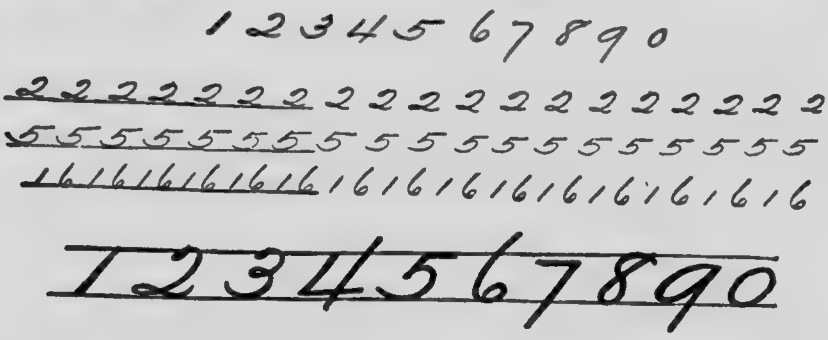
Exercise XI.

In drilling on capital letters, the teacher should refer frequently to exercise VII. The following will form a basis for various lessons:


O J O J O J O J O J O J
W W W W Willing Willing
T T T Twilling Twilling

Exercise XII.

Practice work in the figures should not be overlooked. Notice and call attention to the figures as they extend above and below the base line. The smaller figures in the illustration are to be used in pen work and the larger figures for blackboard exercises.



Questions.

Describe the methods of expressing thought before writing was invented. By whom was the hieroglyphic system used? 3188.

What can you tell of the Chinese system of writing? 566.

Define chirography and stenography. 2620.

State three objects to be obtained in penmanship.

In a brief way, state the correct position of the body and arms while writing.

Describe the movements of the fingers and arm in using the muscular movement.

Name and give example of three systems of penmanship.

State the advantages of vertical writing.

State the general advantages of the slant system in business writing.

Distinguish between the finger movement and the muscular movement in penmanship.

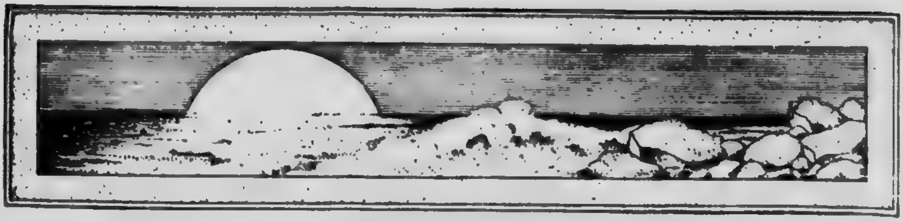
What place should observation and mental concentration have in a student learning to write? 645.

Suggest some means of relaxation before the writing period.

What advantages are obtained by counting for a writing class?

Give a list of the loop letters. Write all the one space, two space and three space letters.

How is one's character revealed by his handwriting?



Geography

Earth, thou fruitful source
Of all our raiment, life and food—
Our house, our parent, and our nurse.
—*Watts.*

GEOGRAPHY is the science which treats of the earth. It is usually divided into four branches or departments, each of which is more or less closely related to the others and to some of the important sciences, such as astronomy, geology and history. The four recognized departments of geography are mathematical, political, physical and commercial geography.

MATHEMATICAL GEOGRAPHY treats of the earth in its relation to the solar system and the laws governing terrestrial phenomena. It enables us to study the location of the earth in space and teaches us about the form, size and movements of our planet. This department likewise treats of the lines and circles imagined to be drawn upon the surface of the earth, representing the whole and portions of its surface on maps or charts, and treats of the length and changes of the seasons and the rise and fall of the tides.

POLITICAL GEOGRAPHY is associated more or less with history, giving a treatment of the social and economical activities of mankind. It embraces a treatment of the government, civilization and manner of life which characterize the different states and nations, including the locality of boundaries, cities and industries.

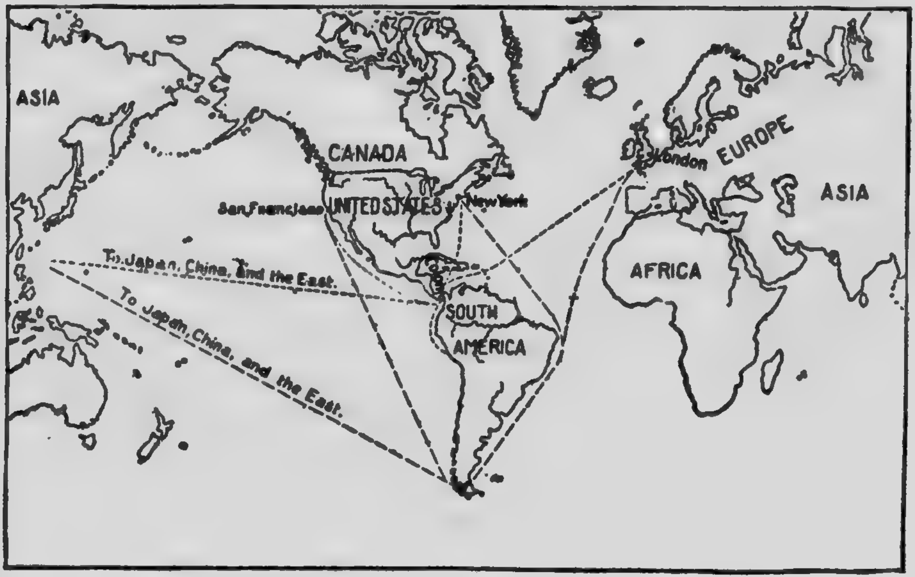
PHYSICAL GEOGRAPHY as a study embraces more or less of the essentials of geology, treating to some extent the internal constitution of the earth, but relating more particularly to its external appearance. More particularly, it embraces a treatment of the atmosphere, the natural divisions of land and water, the movements of the tides, the oceans and seas, and the living and lifeless objects found upon its surface.

COMMERCIAL GEOGRAPHY is the science which investigates the migration of plants and animals, the routes of transportation, the production of useful commodities, and the development of trade and centers of industry. This branch of geography has been growing in scope and general interest with the larger development of railway building and oceanic commerce and communication through the agency of electricity, such as the cable and wireless telegraphy.

Methods in Geography.

Geography being an important branch of study in the public and private schools, it is essential to have a clear understanding of the purposes to be gained and the methods to be emphasized by both the student and the teacher. As a general rule, it is essential to study the locality near at hand and proceed from it to the remote and larger fields of investigation. Students should learn very early in their school course about directions and the points of the compass. For this reason the teacher should emphasize the cardinal and semi-cardinal points. Let the pupil at twelve o'clock stand with his back toward the sun, showing him in this simple way that his face is turned toward the north, his right hand toward the east, his left hand toward the west and his back toward the south. The points half way between the cardinal points should be taught as soon as it is practicable.

As soon as the student is able to designate the points of the compass in the room and on the school ground, he may be asked questions about the direction he lives from the school house and in this way gradually impress the mind with the fact that distance is to be taken into account in studying the relative position of localities. Later, when reasonable progress has been made, the lesson should be transferred to a sheet of paper and a plat should be prepared of the school ground and later of the township and other political subdivisions. From this simple and practical beginning the student can be led by degrees to the remote and more complicated.



THE PANAMA CANAL AND ITS EFFECT ON TRANSPORTATION.

Outline of Methods in Geography

1. Purposes Sought.
    - A. Intimate knowledge of local surroundings.
        - a. Plants.
        - b. Animals.
        - c. Physical features.
        - d. Occupations.
    - B. Principles and laws of the science of geography.
    - C. Application of general laws.
    - D. Cause and effect.
    - E. Exceptions by various local conditions.
2. Preparation of Instructor
    - A. Superior knowledge of subject at hand.
    - B. Ample supply of reference material.
    - C. Thorough acquaintance with current events and correlated subjects.
    - D. Knowledge of general and modern methods of instruction.
    - E. Ability to convert technical and scientific terms to student's grasp.

3. EQUIPMENT.

- A. Modern text books.
- B. Reference books.
- C. Globes.
- D. Maps and pictures.
- E. Indexed clipping file.
- F. Clay, sand and salt for modeling.
- G. Drawing and painting materials for maps and illustrations.

4. METHODS BY DEPARTMENT.

- A. Primary Grade.
  - a. Study home life, man, animals, birds, etc.
  - b. Proceed from local to distant homes.
  - c. Paint and cut animals, plants, scenes, etc.
  - d. Study relative directions, distances and locations.
  - e. Make plans of school room, playground, home and parks.
  - f. Learn simple geographical names.

- B. Intermediate Grade.
  - a. Begin the use of text books.
  - b. Proceed to more general geography.
  - c. Take imaginary journeys.
  - d. Collect pictures and relics.
  - e. Make use of supplementary reading bearing upon geography.
  - f. Have pupils relate incidents of travel.
  - g. Familiarize pupils with names and conditions in county, district or parish.
  - h. Study cities.
    - 1. Location.
    - 2. Size.
    - 3. Growth.
    - 4. Commercial rank.
  - i. Illustrate lessons with sand and clay.
  - j. Begin map drawing on simple scales.

- C. Grammar Grade.
  - a. Use text books and reference works daily.
  - b. Make free use of globes and maps.
  - c. Make files of clippings—Indexed.
  - d. Give attention to current magazine articles.
  - e. Draw maps to a scale.
  - f. Make contrasts and comparisons.
  - g. Study according to statistics and rank.
  - h. Study topics, using references and cross references.
  - i. Give careful attention to causes and effects.
  - j. Have pupils make lists of intelligent questions on lesson assigned and use best lists for whole class to study.
  - k. Let pupils prepare outline of some lesson to be used for study by the class.
  - l. Have brief lecture occasionally during class period by some prominent citizen who has traveled considerably.

Local Geography.

I. INTRODUCTORY LESSONS.

- 1. The Weather.
  - A. Sunshiny.
  - B. Cloudy.
  - C. Windy.
  - D. Calm.
  - E. Cold.
  - F. Warm.
  - G. Cool.
  - H. Rainy.
  - I. Snowy.
  - J. Sleety.
  - K Foggy.
  - L. Sultry.

Keep a record each day by the month, showing the kinds of weather during the month.

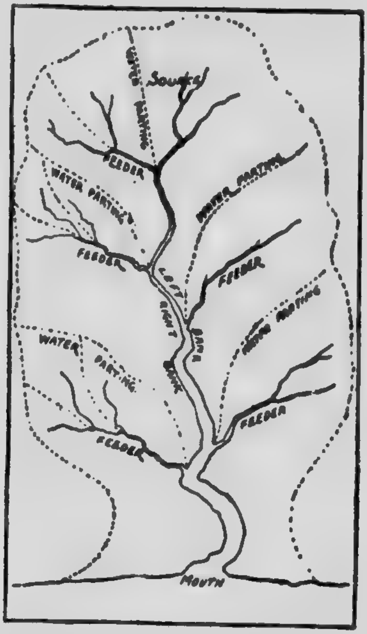
Show the various effects of the different seasons on the following:

A. Vegetation. B. Animals C. People.

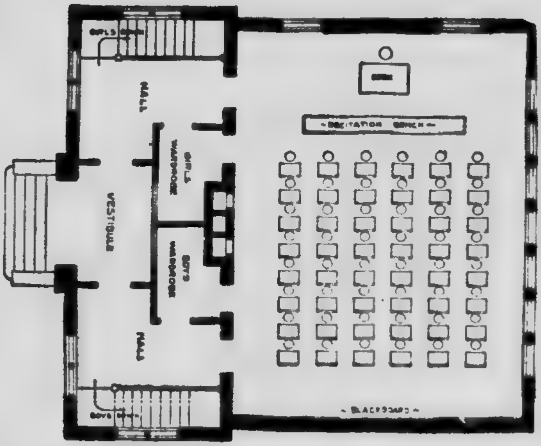
2. Surface.
    - A. Kinds.
        - a. Level.
        - b. Rolling.
        - c. Hilly.
    - B. Slopes.
        - a. Gentle.
        - b. Steep.
        - c. Abrupt.

3. Drainage.
    - A. Brook.
    - B. Creek.
    - C. Pond.
    - D. River.

4. Map-drawing.
    - A. Location.
    - B. Direction.
    - C. Distances.



MAP TO SHOW THE BASIN OF A BROOK OR CREEK.



PLAN OF A SCHOOL ROOM.

Draw a map of the school room in actual proportions, designating directions, locating stoves, desks, doors, windows, fixtures, etc.

Draw a plan of the school building, showing the different rooms and halls on each floor.

Make a plan of the school premises, locating main building, out buildings, well, trees, walks, etc.

Locate other schools, public buildings, or homes by relative directions and distances

5. Things Found in the Earth.
  - A. Stone.
  - B. Slate.
  - C. Coal.
  - D. Gold.
  - E. Silver.
  - F. Copper.
  - G. Clay.
  - H. Iron.
  - I. Lead.
  - J. Zinc.
  - K. Oil.
  - L. Gas.
  - M. Water.
  - N. Sand.
  - O. Diamonds.
  - P. Cobalt.
  - Q. Gravel.
  - R. Marble.
  - S. Kaolin.
  - T. Salt.
  - U. Borax.

6. Things Growing on the Earth and in the Water.
  - A. Trees.
  - B. Grasses and grains.
  - C. Vegetables.
  - D. Fruits.
  - E. Flowers.
  - F. Weeds.
  - G. Fungi.
  - H. Mosses.

7. Animals.
  - A. Man.
    - a. Civilized.
    - b. Semi-civilized.
    - c. Barbarous.
    - d. Races.
    - e. Nationalities.
  - B. Domestic.
  - C. Wild.
  - D. Uses.
    - a. Food and clothing.
    - b. Beasts of burden.
    - c. Drafting.
    - d. Pets.
  - E. Birds of prey.
  - F. Birds of song and plumage.
  - G. Edible birds and bird nests.
  - H. Fowl: wild and domestic.
  - I. Insects: useful and harmful.
  - J. Fishes: fresh water; salt water.
  - K. Reptiles: harmless; dangerous.
  - L. Crustaceans.

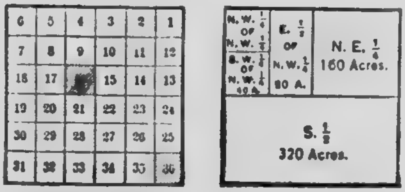
8. Occupations.
  - A. Agriculture.
    - a. Farming.
    - b. Stock raising.
    - b. Fruit growing.
    - d. Gardening.
  - B. Mining: where; how managed; results.
  - C. Manufacturing: where and what produced.
  - D. Transportation: railway, canal, caravan, steamship, automobile, flying machine.
  - E. Commerce.
    - a. Chief articles.
    - b. Where and when marketed.

Outline for Studying the Town or Township.

1. LOCATION.
  - A. Relative position
  - B. Boundaries.
  - C. Sections.
  - D. Number of range.
  - E. Number or name of township.
  - F. Congressional.
  - G. Civil.

2. AREA.
  - A. Number of square miles.
  - B. Number of districts.
  - C. Length and breadth.

3. SURFACE; CLIMATE; RAINFALL.



SUBDIVISIONS OF THE TOWNSHIP.

4. NATURAL RESOURCES.
  - A. Soil.
  - B. Forests.
  - C. Grazing lands.
  - D. Mineral wealth.
  - E. Waterpower
  - F. Navigable waters.

5. INHABITANTS; INDUSTRIES; PRODUCTS; MARKETS.

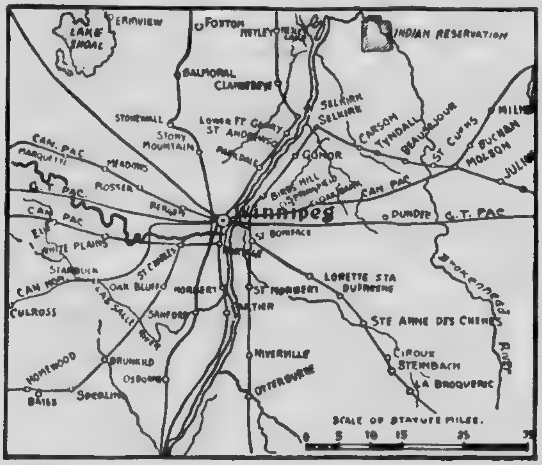
6. GOVERNMENT.
   - A. Officers: school; civil.
   - B. Elections.
     - a. When.
     - b. Where.
     - c. By whom.
     - d. Terms of service.
     - e. Duties of officers.
     - f. Salaries.
     - g. Meetings.

7. MEANS OF TRANSPORTATION AND TRAVEL.
   - A. Horses.
   - B. Oxen.
   - C. Camels.
   - D. Electric cars.
   - E. Cable cars.
   - F. Steam cars.
   - G. Steamboats.
   - H. Sail ships.
   - I. Automobiles.
   - J. Flying machines.

8. EDUCATION.
   - A. Public schools.
   - B. Private or parochial schools.
   - C. Colleges.
   - D. Universities.
   - E. Charitable institutions.

Outline for Studying a City or Incorporated Town.

1. DESCRIPTION.
   - A. Name and its origin.
   - B. Location and position; how determined.
   - C. Area: number square miles; extent of city limits.
   - D. Population: native born; foreign born; number of inhabitants.



   - E. Commerce and Industries.
     - a. Manufactures.
       - 1. Leading articles.
       - 2. Equipments.
       - 3. Persons employed.
       - 4. Annual output.
       - 5. Approximate value.
       - 6. Markets.
     - b. Shipping facilities.
     - c. Exports and imports.
     - d. Banking strength.

F. Advantages.
  a. Surrounding country: agricultural; mining.
  b. Railways.
  c. Navigation.
  d. Waterpower.
  e. Production of raw materials.
  f. Fuel: kinds; where obtained.
  g. Commercial rank.
G. Public Utilities.
  a. Water.
  b. Heat.
  c. Light.
  d. Traffic.
  e. Paving.
  f. Fire protection.
  g. Storm and sanitary sewers.
  h. Telephone.
  i. Public parks.
H. Principal buildings: public; private.
I. Education.
  a. Public schools.
  b. Private or parochial schools.
  c. Colleges.
  d. Universities.
J. Government.
  a. Form of rule: town, representative or commission.
  b. Officers: elective; appointive.
  c. Manner of election.
  d. Term of officers.
  e. Duties; uniforms.
  f. Salaries.
  g. How recalled.
K. History.
  a. Charter: when obtained.
  b. Organization as a village.
  c. Change to city.
  d. Noted citizens.
  e. Principal events.
L. Items of Interest.
  a. Principal streets.
  b. Boulevards.
  c. Natural scenery.

Outline of County, District or Parish.

1. DESCRIPTION.
  A. Name.
  B. Size.
  C. Name and number of townships.
  D. Boundaries.
  E. Position.
  F. Surface: hills; mountains; valleys.
  G. Drainage: creeks; rivers; ponds or lakes.
  H. Industries.
    a. Agriculture: farming; stock raising; dairying.
    b. Mining: chief products.
    c. Manufacture.
    d. Chief markets.
    e. Transportation facilities.
  I. Government.
    a. Officers of county.
      1. Name and number.
      2. How elected.
      3. Terms of office.
      4. Duties of officers.
      5. Salaries.
      6. How recalled.
    b. Taxes: amount levied; collection; use of public funds.
    c. Public buildings: court house; jail, etc.
    d. Institutions: charitable; educational; penal.
    e. Number of congressional or parliamentary district.

none.
parks.

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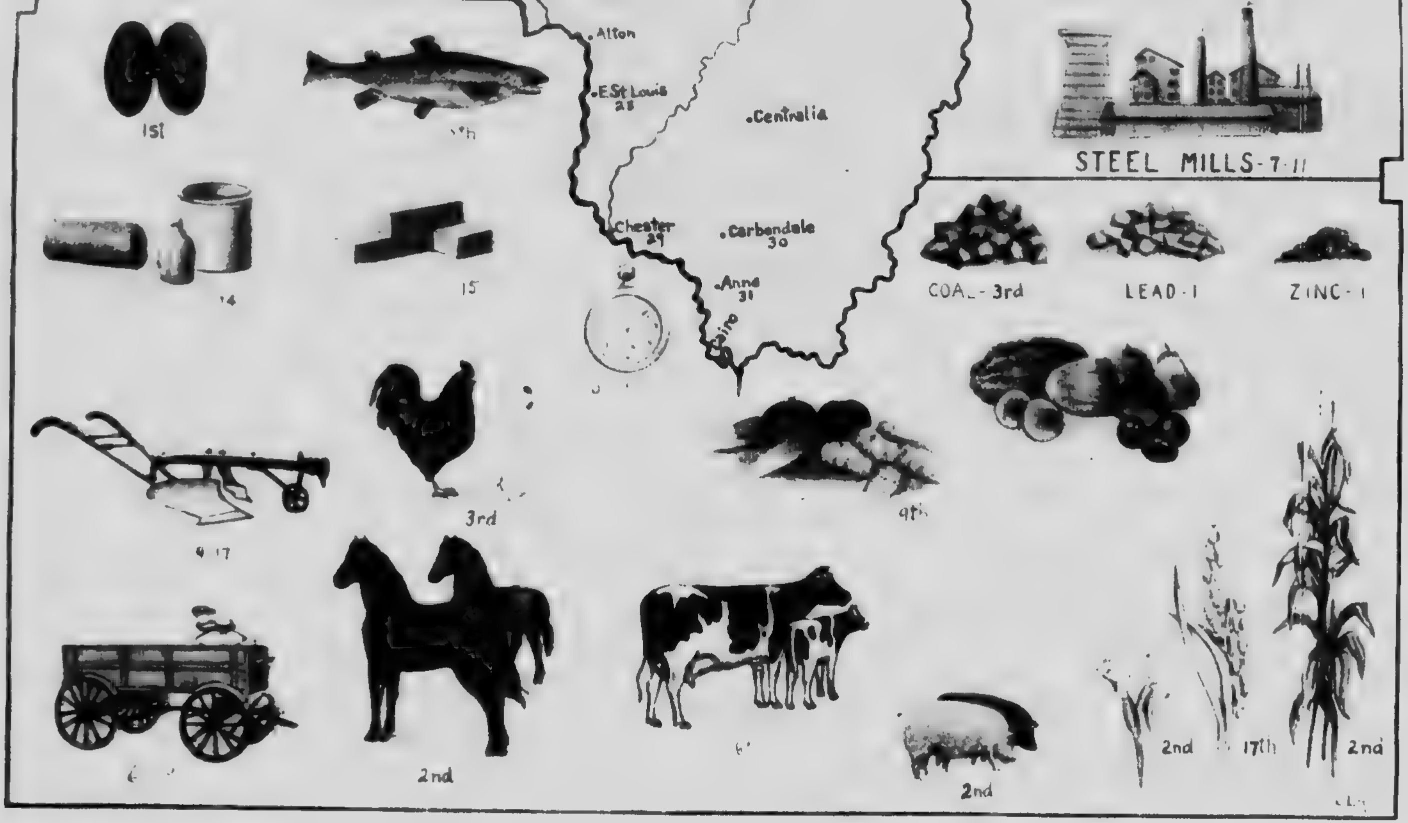

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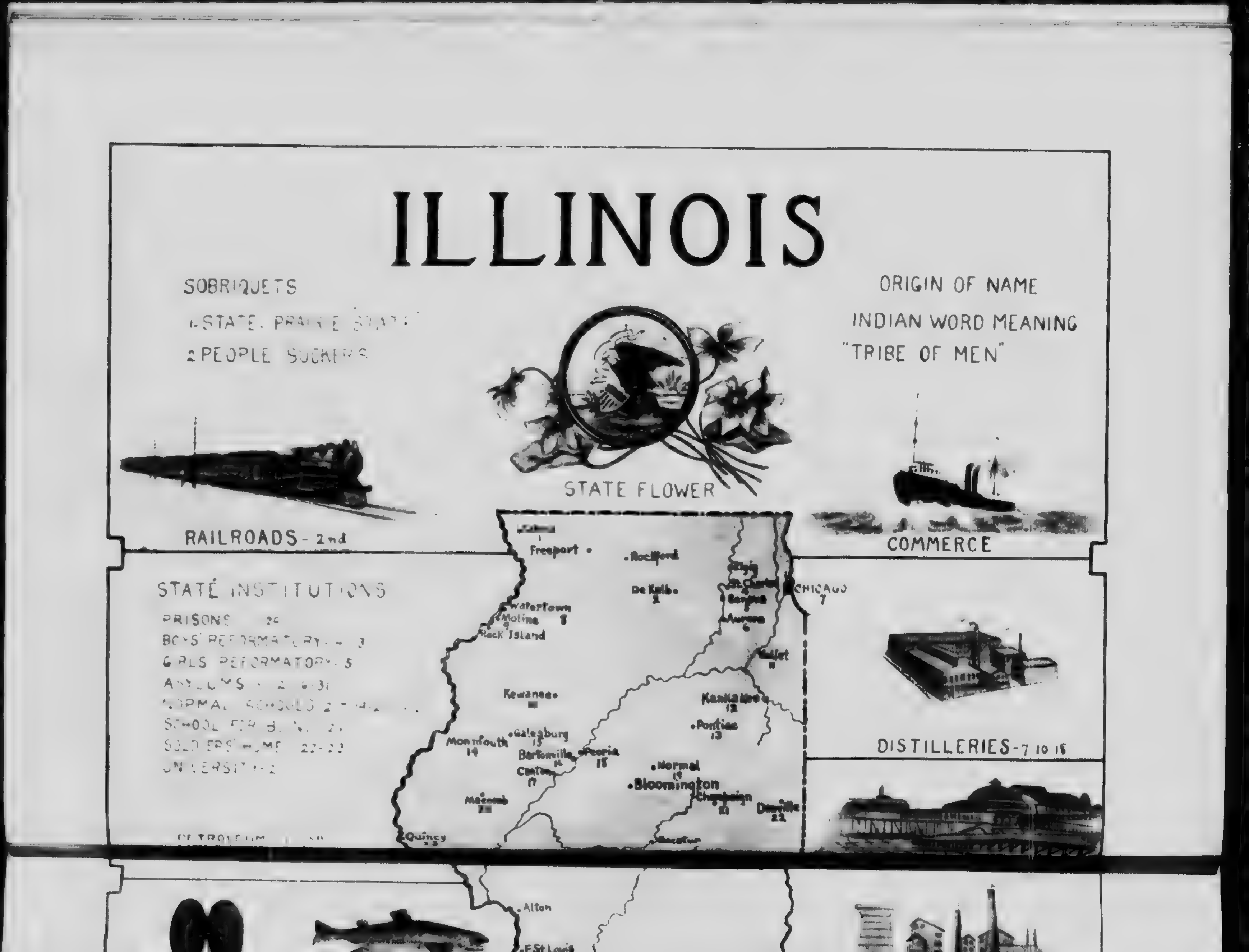
ILLINOIS
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1-STATE- PRAIRIE STATE
2 PEOPLE SUCKERS
ORIGIN OF NAME
INDIAN WORD MEANING
"TRIBE OF MEN"
STATE FLOWER
RAILROADS - 2nd
COMMERCE
STATÉ INSTITUTIONS
PRISONS 20
BOYS' REFORMATORY - 3
GIRLS REFORMATORY - 5
ASYLUMS - 2 6-31
NORMAL SCHOOLS 2
SCHOOL FOR B.
SOLDIERS' HOME 22-23
UNIVERSITY - 2
PETROLEUM
DISTILLERIES-7 10 15
Freeport 1
Rockford
De Kalb 2
Elgin
St. Charles
Geneva
Aurora 6
CHICAGO 7
Watertown 8
Moline 9
Rock Island
Joliet
Kewanee
Kankakee 12
Pontiac 13
Monmouth 14
Galesburg 15
Bartonville 16
Peoria 18
Canton 17
Normal 19
Bloomington
Champaign 21
Danville 22
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J. List and location of villages, towns, cities.
K. Seat of Government.
  a. Name and location.
  b. Rank among other cities.
    1. Population.
    2. Commerce.
    3. Natural advantages.
    4. Banki
L. History.
  a. First settlers.'
  b. Organization.
  c. List of noted men and women.
  d. Noted events.
  e. Items of interest.
  f. Transportation.

Outline for Studying a State or Province.

1. NAME: ITS ORIGIN.

2. LOCATION.
  A. Relative position in the country.
  B. Latitude and longitude.
  C. Boundaries: natural; by agreement or treaty.

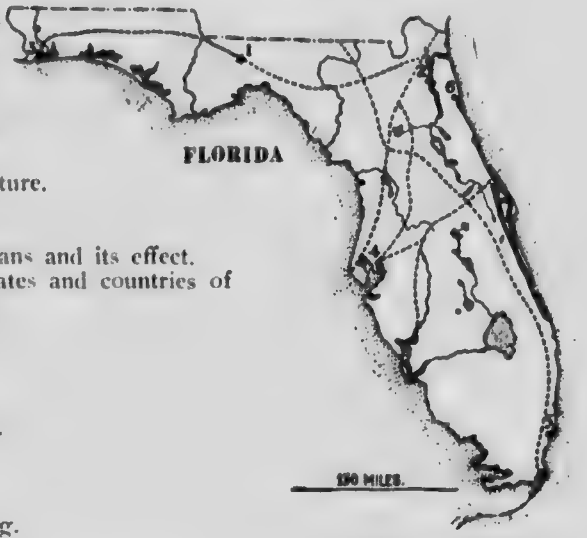
3. SIZE: LENGTH; BREADTH; AREA; FORM; COMPARATIVE SIZE WITH OTHER STATES OR PROVINCES.

4. SURFACE: HIGHLANDS; LOWLANDS; PLAINS; WATERSHEDS.

5. DRAINAGE.
  A. Rivers and tributaries.
  B. Lakes: size; depth; outlet.
  C. Adjacent waters.

6. CLIMATE.
  A. Average temperature.
  B. Annual rainfall.
  C. Winds.
  D. Proximity to oceans and its effect.
  E. Compare with states and countries of similar latitude.

7. OCCUPATIONS.
  A. Industries.
    a. Farming.
    b. Dairying.
    c. Stock raising.
    d. Lumbering.
    e. Mining.
    f. Fishing.
    g. Manufacturing.
    h. Transportation.
  B. Leading products: raw materials; manufactured articles.
  C. Chief exports and imports.
  D. Commercial centers. Why?



1. Tallahassee; 2. Jacksonville; 3. Pensacola; 4. Tampa; 5. Miami; 6. Saint Augustine. Chief railroads are shown by dotted lines.

8. POPULATION: NATIVE BORN; LEADING NATIONALITIES.

9. EDUCATION.
  A. Public schools: common; high; normal; technical; industrial.
  B. Colleges.
  C. Universities.
  D. Parochial or private.
  E. State or provincial institutions.

10. GOVERNMENT.
    A. Departments: executive; legislative; judicial.
    B. Officers.
        a. Number and name.
        b. Election.
        c. Term of office.
        d. Duty and salary.
    C. Number and names of parishes, counties or districts.
    D. Number of senators and representatives.
    E. Members in national congress or parliament.
11. CAPITAL AND PRINCIPAL CITIES.
12. STATISTICS.
    A. Population at latest census.
    B. Density of population.
    C. Rate of increase in population.
    D. Annual productions: raw materials; manufactured articles.
13. HISTORY.
    A. First settlements.
    B. Organization as territory.
    C. Admission to Confederation or Union.
    D. Historical events and localities.
    E. Prominent personages.

Questions on Elementary Geography.

What is geography? Name and define the four recognized departments into which it is divided. 1112.

What are the chief purposes to be sought in studying this branch?

Give a list of equipments necessary to the successful study of geography. Briefly state the preparation an instructor should have.

State fifteen practical suggestions for methods in studying geography.

What is a township? Tell how it is divided and subdivided. By a drawing locate the following land: The east half of the north half of the northeast quarter of section 12.

What is a county seat and how is it located? What are charitable institutions? Name and locate the government institutions of your own state or province.

When may a town be said to be incorporated? When does it become a city? Name the chief officers of your own town and describe its government.

How are boundaries of states and countries fixed? How and when are the census obtained?

Distinguish between a territory, a state and a province.

Prepare a drawing to show the basin of a river, indicating the source, the mouth, and at least five contributaries.

Define our system of education, explaining the meaning of common and high school, normal school, parochial or private school, and university.

Advanced Geography.

Solar System.

1. Define the following:
    A. Sphere.
    B. Sun.
    C. Planet.
    D. Moon.
    E. Fixed star.
    F. Comet.
    G. Solar system.
    H. Circle.
    I. Ellipse.
    J. Focus.

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(Method Book, Opp. 609)

CREVASSE OVER 200 FEET DEEP IN MUIR GLACIER, ALASKA.

K. Diameter.
L. Circumference.
M. Orbit.
N. Ecliptic.
O. Aërolite.
P. Plane of ecliptic.

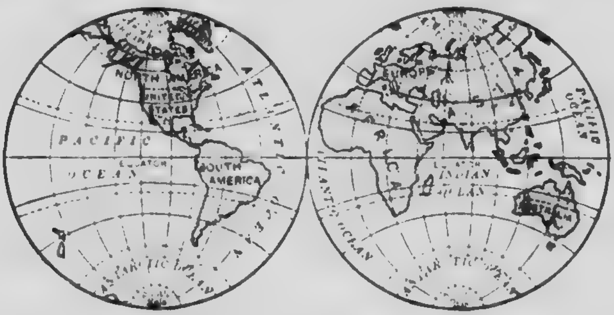
2. Name planets in order from the sun and draw an illustration of the orbits.

MOON.

1. Distance from earth.
2. Revolution.
3. Rotation.
4. Orbit.
5. Nodes.
6. Phases.
7. Eclipses: of moon; of sun.
8. Physical features: shape; size; etc.
9. Why is the same side of the moon always toward the earth?

EARTH.

1. Shape: proofs.
2. Density.
3. Motions: proofs.
4. Relative size compared with sun, moon, etc.
5. Diameter: equatorial; polar.
6. Axis and its inclination.
7. Circles and lines.
   A. Circumference.
   B. Great circle.
   C. Small circle.
   D. Equator.
   E. Tropics.
   F. Polar circles.
   G. Meridian.
   H. Prime meridian.
   I. Parallel.
   J. Horizon.
   K. Isothermal lines.
   L. Date line.
8. Surface.
   A. Mountain.
   B. Plain.
   C. Plateau.
   D. Valley.
   E. Watershed.
   F. Canyon.
   G. Glacier.
   H. Avalanche.
   I. Volcano.
   J. Desert.
   K. Plains.
   L. Reefs.
9. Indentations and projections.
   A. Gulf.
   B. Bay.
   C. Cape.
   D. Isthmus.
   E. Strait.
   F. Fiord.
   G. Estuary.
   H. Delta.
   I. Promontory.
10. Drainage: river; lake; sea; ocean.



HEMISPHERES, SHOWING PARALLELS AND MERIDIANS.

11. Land divisions: hemisphere; grand division; continent; country; island.

12. Define the following:
   A. Aurora borealis.
   B. Basin.
   C. Capital.
   D. Capitol.
   E. Cardinal.
   F. Cataract.
   G. Climate.
   H. Currents.
   I. Cycle.
   J. Degree.
   K. Detritus.
   L. Diurnal.
   M. Erosion.
   N. Export.
   O. Iceberg.
   P. Import.
   Q. Latitude.
   R. Longitude.
   S. Metropolis.
   T. Poles.
   U. Range.
   V. System.
   W. Zenith.
   X. Zones.

Races of Man.

1. Caucasian or White race.
   - A. Superior to all others; most numerous.
   - B. Characteristics: High forehead; heavy beard; regular features.
   - C. Home: Most of Europe; northern and southern Africa; America; India; Arabia; Australia.
2. Mongolian or Yellow race.
   - A. Constitute one-third population of the earth.
   - B. Characteristics: Almond-shaped eyes; scanty beard; high cheek bones.
   - C. Home: Japan; China; parts of Turkey and Hungary; Lapland; Finland; Arctic regions.
3. Black or Negro race.
   - A. Characteristics: Black wooly hair; scanty beard; thick lips; low forehead.
   - B. Home: Central Africa; New Guinea; parts of America.
4. Malay or Brown race.
   - A. Characteristics: Horizontal eyes; full beard; straight black hair.
   - B. Home: Malay Peninsula; islands of Pacific.
5. American Indian or Red race.
   - A. Characteristics: Black hair and eyes; high cheek bones; scanty beard.
   - B. Home: America.
6. Population of earth: 1,515,000,000.

Religions.

1. Christian: Based upon both the Old and the New Testament.
   - A. Number: 496,082,533.
   - B. Divisions: Protestant; Roman Catholics; Greek Orthodox; Church of Abyssinia; Arminians.
2. Jewish: Jews believe in the Old Testament but reject the New.
   - A. Number: 11,800,000.
3. Mohammedan: Founded by Mohammed, author of the Koran, which is the sacred scriptures of their belief.
   - A. Number: 250,000,000.
4. Brahminical: Based upon belief that after many transmigrations the soul finally loses its individuality and becomes merged in Brahm, the supposed soul of all things.
   - A. Number: 210,000,000.
5. Buddhist: Founded by Buddha; similar to Brahmanism.
   - A. Moral code is excellent, being similar to that of Christianity.
   - B. Number: 147,900,000.
6. Confucianism: The code of morality taught by Confucius and his disciples.
   - A. Number: 200,000,000.

Eastern Hemisphere.

1. Location and boundaries.
2. Draw a map of the hemisphere.
   - A. Locate the equator, tropics, polar circles, boundary meridians, prime meridian, meridian of 80°, Asia, Africa, Europe, Australia, East Indies, Oceans, Seas, etc.

3. Area: Land surface of entire hemisphere—about 35,000,000 square miles.
    A. Asia: 17,000,000
    B. Africa: 11,000,000
    C. Europe: 3,800,000
    D. Australia: 3,000,000

4. Population: Entire, about 1,345,000,000.
    A. Africa: 140,000,000
    B. Asia: 860,000,000
    C. Australasia: 5,000,000
    D. Europe: 340,000,000

Western Hemisphere.

1. Location and boundaries.

2. Draw a map of the hemisphere.
    A. Locate equator, tropics, polar circles, boundary meridians, meridian of 100°, North America, South America, Greenland, Caribbean Sea, Gulf of Mexico, New Zealand, Sandwich Islands, Oceans, etc.

3. Area: About 16,000,000 square miles.
    A. North America: 8,350,000
    B. South America: 7,700,000

4. Population: About 170,000,000
    A. North America: 125,000,000
    B. South America: 45,000,000

Oceans and Seas.

1. Draw outline map of each ocean.
    A. Give boundaries, equator, tropics, polar circles, currents, principal islands.
    B. Discuss dimensions, area, depth, temperature, currents, tides, etc.
    C. Compare depth of water and elevation of land.
    D. Draw map showing principal steamship lines; cable lines.

North America.

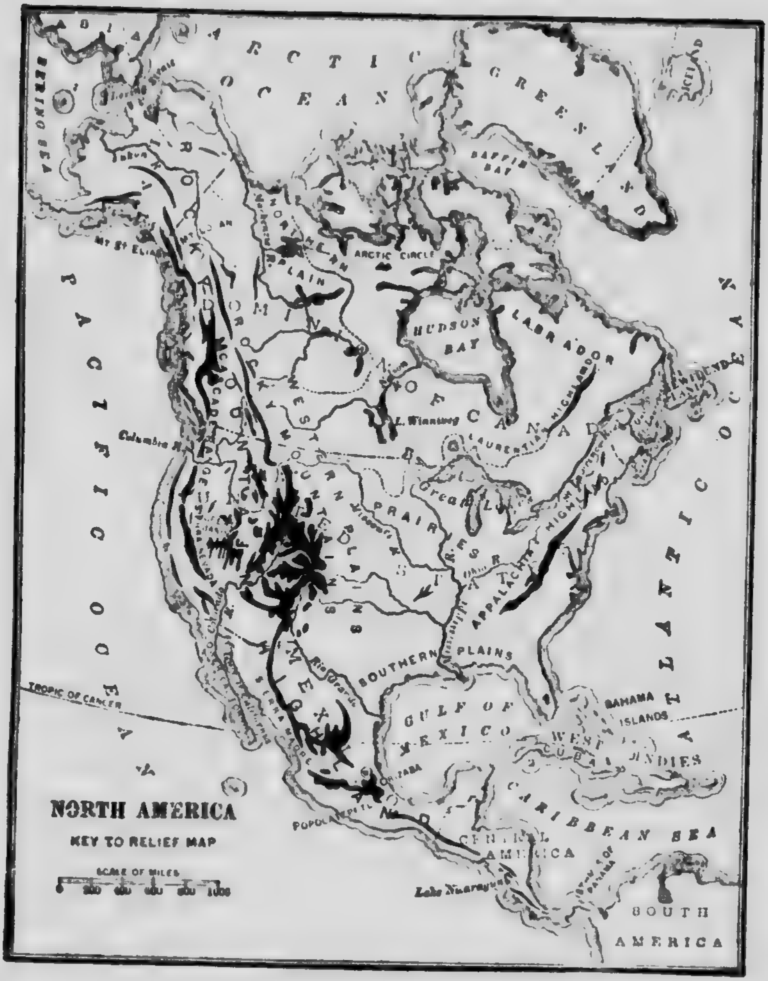
1. Location and boundaries.

2. Draw map locating tropic of cancer, arctic circle, parallel of 49° north latitude, Dominion of Canada, Alaska, Greenland, United States, Mexico, Central America, West Indies, Bahama Islands, Gulf of Mexico, Great Lakes, Hudson Bay, Rocky and Appalachian Mountain systems, etc.

3. Area: Length; breadth; rank in size.
    A. Square miles: 8,350,000.
        a. Dominion of Canada: 3,750,000
        b. United States: 3,743,000
        c. Alaska: 591,000
        d. Mexico: 767,500
        e. Central America: 211,000
        f. West Indies: 93,500

4. Population.
    A. Total: 125,000,000.
        a. Dominion of Canada: 7,500,000
        b. United States: 92,500,000
        c. Alaska: 65,000
        d. Mexico: 15,500,000
        e. Central America: 3,600,000
        f. West Indies: 7,200,000
    B. Races: Caucasian, Negro, Indian, Mongolian.

. Surface.
    A. Appalachian system.
        a. Mountain ranges.
            1. White Mountains.
            2. Green Mountains.
            3. Adirondacks.
            4. Catskill.
            5. Blue Ridge.
            6. Cumberland.
            7. Allegheny.



B. Rocky Mountain system.
  a. Mountain ranges.
    1. Rocky Mountains.
    2. Cascade Range.
    3. Sierra Nevada.
    4. Coast Range.

C. Plateaus and Plains.
  a. Atlantic Coastal Plain.
  b. Piedmont Plateau.
  c. Cumberland Plateau.
  d. Great Central Plain.
  e. Ozark Plateau.
  f. Columbia Plateau.
  g. Colorado Plateau.
  h. Great Basin.

6. Drainage.
  A. River systems.
    a. Atlantic.
    b. Arctic.
    c. Gulf.
    d. Great Basin.
    e. Saint Lawrence.
    f. Columbia.
    g. Colorado.
    h. Mississippi.
  B. Lakes: Great Lakes; lakes of the north, east and south.

RELIEF MAP OF NORTH AMERICA.

7. Climate: Temperature; rainfall; winds and storms.
   - A. Compare northern and southern parts, eastern and western, coastal and inland, highlands and plains.
   - B. Give reasons for difference in temperature and moisture.

Questions on Advanced Geography.

Give several proofs that the earth is round. What explanation is given for the earth being a spheroid rather than a sphere? 855.

Distinguish between the rotation and the revolution of the earth and state the effects of each.

Illustrate by a drawing the change of seasons. 2575. What kind of weather have they in Central Africa at our Christmas time?

When it is noon at Washington, D. C., what time is it at Bahia, Brazil?

Which way do shadows fall at noon in the islands of Sumatra? Why?

What are some of the evidences of intense heat within the earth? Name and locate some famous hot springs, geysers and volcanoes. 1135.

Describe the action of the trade winds and the westerlies. How do mountains and winds affect the rainfall of a country? 3159.

What is the cause of tides? What and where are the greatest ocean currents and what is their importance? 2876.

Make a list of the more important plants and animals of each zone. 3224.

How do you account for the difference in climate between Quebec and London? Between San Francisco and New York City?

What and where is the International Date Line? Locate the prime meridian and state its use. 1397.

Which countries are the most densely populated, and why? Where are the savage tribes living today? Where do the most civilized people live?

How may good governments greatly promote trade? How do natural resources affect the manufacturing and other industries of a locality?

Name some important trade centers of the various countries, both inland and coastal. How have they become so?

Where are the principal forest regions of the world? Name the chief products derived. 1031.

Which countries rank first in mineral wealth? Indicate by a world map the distribution of gold, silver, copper, iron and coal.

Name the leading manufacturing nations of the world and give the chief articles of export of each.

Dominion of Canada.

1. Location and boundaries. Area: 3,745,574 square miles.
2. Draw map locating Arctic Circle, parallel of 49°, Nova Scotia, New Brunswick, Prince Edward Island, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Yukon, Northwest Territories, coast of Labrador. Locate chief cities.
3. Draw physical map, locating mountains, highlands, rivers, lakes, etc.
4. Surface.
   - A. Northern extension of Appalachians in eastern provinces.
   - B. Rocky mountains and Cascade range along western border.
   - C. Arctic plain sloping north and east.
   - D. Other mountains: Laurentian, Cobequid, Notre Dame, Hooker, Brown.
5. Capes and Peninsulas: Bathurst, Breton, Sable, Gaspé, Canso, Scott, Hurd, Labrador, Nova Scotia.
6. Islands: Queen Charlotte, Vancouver, Manitoulin, Prince Edward, Anticosti, Cape Breton, Magdalen, Thousand Islands.

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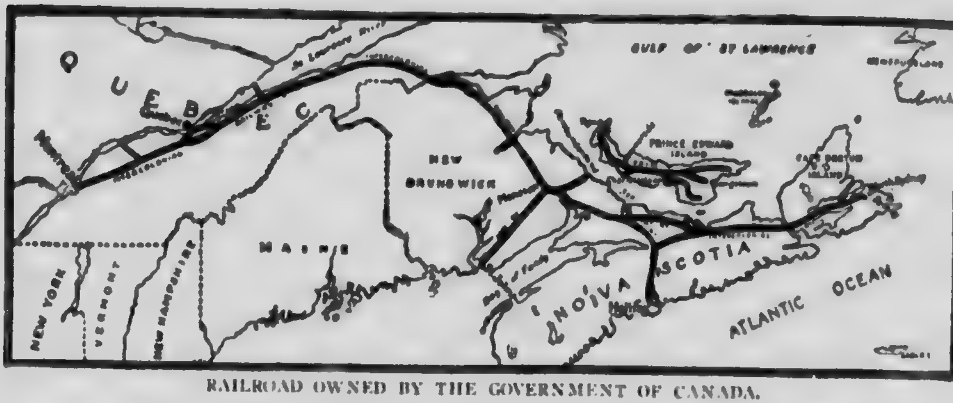
7. **Gulfs and Bays: Fundy, Chaleurs, Miramichi, Saint Lawrence, Georgian,** Hudson, Baffin, James, Ungava, Mackenzie.
8. Straits and Sounds: Hudson, Belle Isle, Northumberland, Canso, Queen Charlotte, North Channel, Juan de Fuca.
9. Lakes: Great Bear, Great Slave, Athabasca, Winnipeg, Winnipegosis, Manitoba, Saint Peter, Lake of the Woods, Rainy.
10. Rivers: Saint Lawrence, Ottawa, Saguenay, Saint Maurice, Sorel, Saint John, Red River of the North, Assiniboine, Nelson, Saskatchewan, Churchill, Athabasca, Fraser, Peace, Mackenzie, Yukon, Albany, East Main, Qu'Appelle, Rainy, Restigouche.
11. Climate.
    - A. Long, cold winters and short, pleasant summers, especially in southern parts.
    - B. Province of Quebec is colder in winter and warmer in summer than Ontario, except in the extreme northern part.
    - C. Manitoba, Saskatchewan and Alberta have pleasant summers and cold winters, but the climate is exceptionally healthful.
    - D. British Columbia and large portion of western part have remarkably mild winters, owing to warm ocean currents of the Pacific.
    - E. Northern part is too cold to be productive or habitable.
12. Population, 1911, 7,204,527, of which 3,924,394 was rural population and 3,280,444 was urban population.
    - A. In 1911 the density of population per square mile was 1.93, a slight increase over 1901, when it was 1.44.
    - B. Races and nationalities represented.
    - C. Number of males in 1911: 3,821,067; females, 3,383,771.
    - D. Religion: Protestant; Roman Catholic.
13. Exports, 1912, $315,317,250; imports, 1912, $559,230,544.
14. Cities: Ottawa, Ont., is the capital. The following cities had a population of over 10,000 in 1911:

	1911	1901
Montreal, Que	470,480	267,730
Toronto, Ont	376,538	208,040
Winnipeg, Man	136,035	42,340
Vancouver, B. C	100,401	27,010
Ottawa, Ont	87,062	59,928
Hamilton, Ont	81,969	52,634
Quebec, Que	78,190	68,840
Halifax, N. S	46,619	40,832
London, Ont	46,300	37,976
Calgary, Alta	43,704	4,392
Saint John, N. B	42,511	40,711
Victoria, B. C	31,660	20,919
Regina, Sask	30,213	2,249
Edmonton, Alta	24,900	2,626
Brantford, Ont	23,132	16,619
Kingston, Ont	18,874	17,961
Maisonneuve, Que	18,684	3,958
Peterborough, Ont	18,360	11,239
Hull, Que	18,222	13,993
Windsor, Ont	17,829	12,153
Sydney, N. S	17,723	9,909
Glace Bay, N. S	16,562	6,945
Fort William, Ont	16,499	3,633
Sherbrooke, Que	16,405	11,765
Berlin, Ont	15,196	9,747
Guelph, Ont	15,175	11,496
Westmount, Que	14,579	8,856
Saint Thomas, Ont	14,054	11,485
Brandon, Man	13,839	5,620
Moose Jaw, Sask	13,823	1,558
Trois Rivieres, Que	13,691	9,981
New Westminster, B. C	13,199	6,499
Stratford, Ont	12,946	9,959
Owen Sound, Ont	12,558	8,776
Saint Catherines, Ont	12,484	9,946
Saskatoon, Sask	12,004	113
Verdun, Que	11,629	1,898
Moncton, N. B	11,345	9,026
Port Arthur, Ont	11,220	3,214
Charlottetown, P. E. I	11,198	12,080
Sault Sainte Marie, Ont	10,984	7,169
Chatham, Ont	10,770	9,068
Lachine, Que	10,699	5,561
Galt, Ont	10,299	7,866

15. Occupations: Agriculture, mining, stock raising, commerce, fishing, furring, manufacturing, etc.
    - A. Cereals are grown very extensively, including chiefly wheat, oats, barley, rye, flax and corn. Winnipeg is the largest wheat market in the British Empire. Corn culture is confined chiefly to Ontario.
    - B. Lumbering is an extensive industry in Ontario, British Columbia and Quebec. Many of the forests are very valuable.



RAILROAD OWNED BY THE GOVERNMENT OF CANADA.

C. The minerals include coal, gold, silver, cobalt, salt, petroleum, nickel, gypsum, asbestos, graphite, iron, and mica. Ontario produces about half of all the nickel mined in the world and has a large yield of cobalt, copper and salt.

D. Fruits are grown in large quantities for the market and for the export trade, particularly apples. Other fruits include peaches, grapes, plums, pears, apricots and shrubbery.

E. Dairying has attained a high state of development in Ontario, New Brunswick and Manitoba. Cheese and milk are exported.

F. The fisheries of Canada take high rank among the nations, particularly those of salmon, cod, lobster, whitefish and sardines. British Columbia has some of the finest salmon fisheries and canneries in the world. Nova Scotia and Prince Edward Island yield large catches of cod.

G. Vegetables thrive throughout the southern part of Canada and are grown extensively. They include potatoes, cabbage, onions, turnips, celery, tomatoes, parsley, beans, peas, lettuce, etc.

16. Government: Colonial possession of Great Britain with home government by the people.

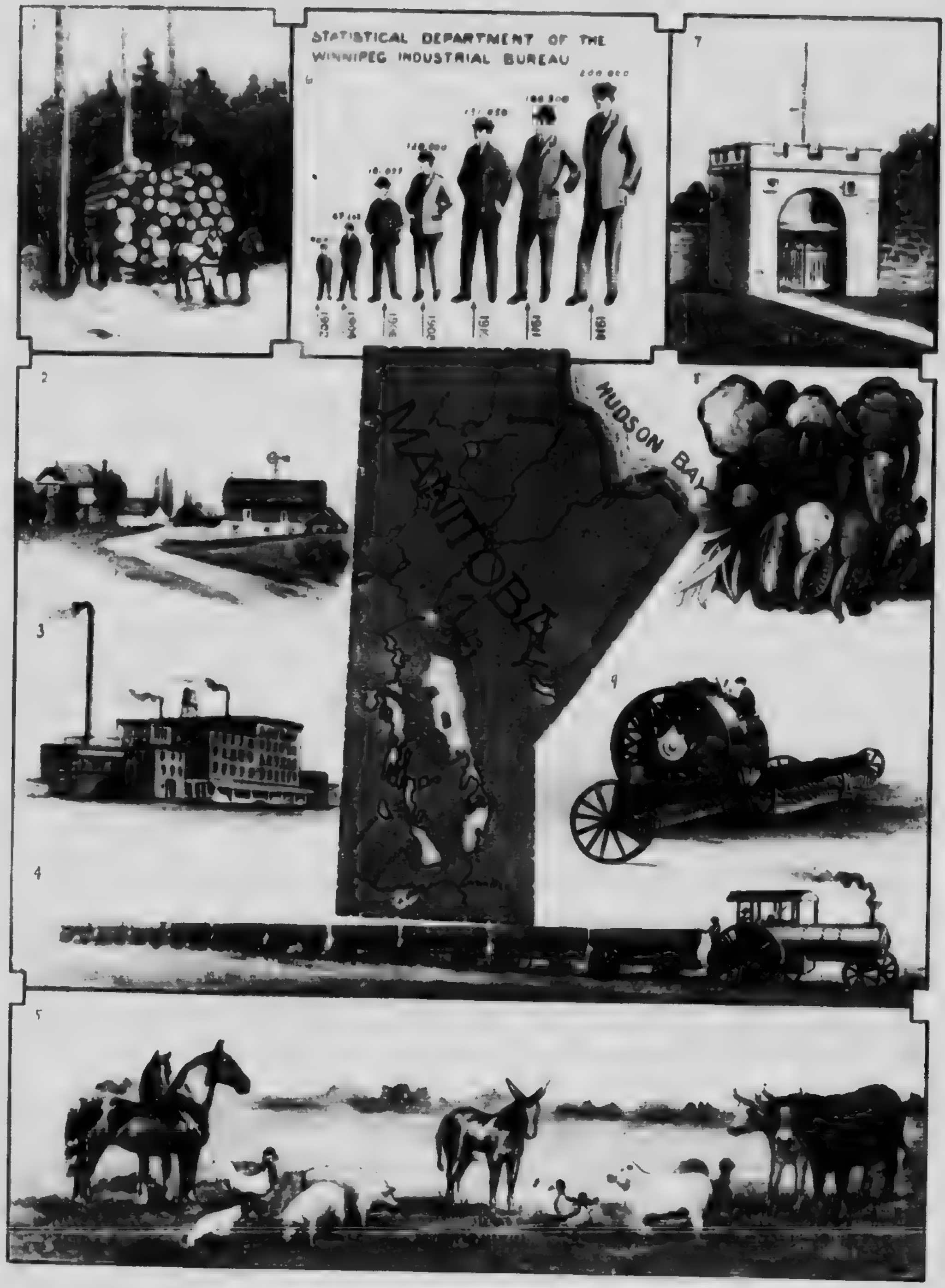
A. Executive department.
  a. Governor-General appointed by the Crown.
  b. Privy Council presided over by the Premier.
  c. High Commissioner for the Dominion in Great Britain.

B. Legislative department consisting of Dominion Parliament.
  a. Senate of 87; members appointed for life by the Governor-General.
  b. House of Commons; members elected by the people of the provinces according to population.

C. Judicial department.
  a. Supreme court at Ottawa, with appellate, civil and criminal jurisdiction throughout the Dominion, and an exchequer court with power of admiralty.

The provinces have each a separate parliament and administration, with a lieutenant-governor, who is appointed by the governor-general, at the head of the executive. Each province has a general assembly, whose members are elected by the people in constituencies. Full power to regulate local affairs and dispose of their revenues is vested in the several provinces.

16. History: The valley of the Saint Lawrence was first occupied by the French. Canada was ceded to England by France at the close of the French and Indian War in 1763. Canada declined the invitation to join the Americans in the Revolution. Present Canadian Confederation was formed in 1867.



(Method Book Opp. 516)

MANITOBA.

1, Lumbering; 2, Farm home; 3 Flouring mills; 4, Train of wagons loaded with wheat being drawn to market; 5, Live stock and poultry; 6, Phenomenal growth of Winnipeg; 7, Gate of Fort Garry; 8, Vegetables; 9, Sowing grain.

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Questions on the Dominion of Canada.

What can you say about the size and surface of Canada? 451.

Name the principal rivers and lakes of the Dominion. 452.

Has Canada grown rapidly the past decade in wealth and population? Why? 455, 458.

Describe the Saint Lawrence system of navigation, naming the principal Canadian ports of trade.

Name the provinces of the Dominion and locate their capitals.

What changes were made in the boundaries of Manitoba, Ontario and Quebec in 1912? 458.

Where are the principal fisheries of Canada? What kinds of fish are most abundant? 453.

Is Newfoundland a part of Canada? 451, 1937.

Write an essay on the government of Canada, describing its executive, legislative and judicial systems. 455.

Newfoundland.

1. Newfoundland and the eastern coast of Labrador form a British province separate from Canada.
2. The islands of Saint Pierre and Miquelon, south of Newfoundland, belong to France, and the French claim the right to land on certain parts of Newfoundland to cure fish, etc.
3. Chief occupations: Fishing. Cod-fisheries of Newfoundland most important in the world.
4. Products: Fish, canned lobsters, [illegible] coal, lead.
5. Exports: Cod-fish, lobster, cod liver [illegible]
6. Capital: Saint John's, most important [illegible]

Facts Regarding British America.

The Saint Lawrence is the most important navigable river of Canada.

Montreal is at the head of ocean and river navigation by large steamers. Between Montreal and Lake Ontario a number of canals surmount the rapids which occur in the river.

The country has splendid forests and exports immense quantities of lumber. The trade is largely with the United States and Great Britain.

Canada is well supplied with railroads. The Canadian Pacific, the Grand Trunk and the Canadian Northern are the three trunk lines which connect the transportation of the east and the Great Lakes with the Pacific coast.

The estimated cost of the Welland Canal is $9,000,000. It is 15 feet deep, 160 feet wide, and 27 miles long.

The Victoria bridge across the Saint Lawrence at Montreal, an immense tubular structure, cost about $6,300,000. It is over a mile long.

Although nominally under Great Britain, Canada is practically independent in its government, which is highly efficient.

Hudson Bay and Davis Strait, either with the Nelson River or a railroad, will soon be utilized as a water-way for exporting grain and other products from the prairie provinces.

Quebec is regarded as the strongest fortress in the world, except Gibralter.

The Bay of Fundy is remarkable for its tides, which rise to the height of 71 feet.

The wheat crop of Canada is steadily increasing with the larger and rapid development of the prairie provinces.

At the mouth of the Mackenzie River the summer day is about two months long.

The Saguenay is said to be the deepest river in the world, the depth near the mouth being 3,000 feet.

The latitude of Montreal is about the same as that of Venice in Italy.

Canada extends about 75 miles farther south than Maine. The longest growing season is in British Columbia, where cereals, fruits, and vegetables are produced with much profit.

Quebec is the largest province of the Dominion, Ungava having been made a part of it in 1912.

Danish America.

1. Composed of Greenland and Iceland, which belong to Denmark.
    - A. Greenland: Largest island in the world.
        - a. Population: 12,156; Eskimos, few whites along southwestern coast.
        - b. Severe weather; July is the only month without snow.
        - c. Exports: Oil of seals and whales, furs, eider-down, fish.
        - d. Towns: Godthaab; Upernivik—most northern town in the world.
    - B. Iceland: Largest island of Europe except Great Britain.
        - a. Many highlands in the north; numerous volcanoes, geysers, glaciers.
        - b. Climate is warmer than that of any other country of same latitude, average January temperature like that of New York City.
        - c. Inhabitants: Of Scandinavian origin; live along the coast.
        - d. Reikjavik is the only town of importance.

Questions on Danish America.

When and by whom was Greenland discovered? How is it separated from the continent of North America? 1199.

By what classes of people is it now inhabited? What is the present population?

What are the chief occupations and the leading products of Greenland?

Give the location of Iceland. How was it originally formed? 1358.

What is said of the literature of Iceland? What are the Sagas? 2181.

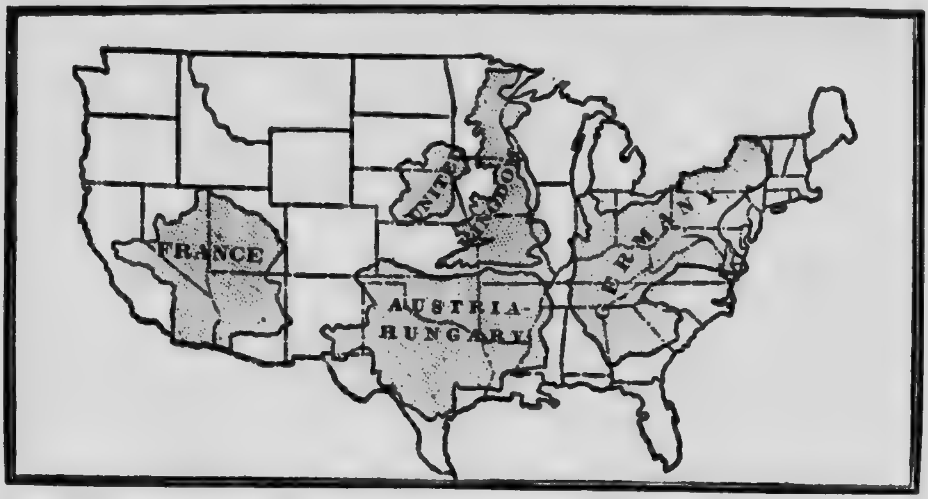
Tell how Greenland and Iceland are governed. Name their important cities.

United States.

1. Position: Latitude and longitude; comparison with other countries.
2. Boundaries: Natural; political.
3. Size and extent: Width, length, area. Compare with other countries.
4. Draw maps of United States to represent it politically, physically; density and distribution of population, rainfall, commercial routes, etc.
5. Climate: Coastal and gulf region; highlands; lowlands; average rainfall, temperature, need of irrigation, effects of winds, tides, currents, etc.
    - A. Northern part: Winters cold, temperature falling as low as 40° below zero; summers warm, often from 95° to 100° above zero.
    - B. Southern half: Winters very mild, there being little frost or snow; extreme south in the lowlands, frost and snow scarcely ever occur.
    - C. Coast of California has no winter; that of Oregon and Washington but little.
    - D. Mississippi Valley and eastern states usually have abundance of rain although occasional droughts occur.
    - E. Pacific highland and slope have but little rain and consequently depend largely upon irrigation.
    - F. Coast of California has rainy season instead of a winter, and no rain during the summer.

6. **Surface.**
   - A. Atlantic and Gulf Coastal Plain.
   - B. Appalachian Highlands.
   - C. Great Central Plain.
   - D. Rocky Mountain Highlands.
   - E. Great Basin.
   - F. Pacific Slope.

7. Mountains: Allegheny, Katahdin, Green, White, Washington, Adams, Jefferson, Adirondack, Marcy, Catskill, Blue, Cumberland, Mt. Mitchell, Smoky, Blue Ridge, Ozark, Rocky, Sierra Nevada, Coast Range, Baker, Saint Helens, Hood, Whitney, Hamilton, Wasatch, Big Horn, Black Hills, Pike's Peak, Spanish Peaks, Wind River, Laramie, Bitter Root, Alaskan Range, Saint Elias, Shasta.



MAP TO SHOW THE COMPARATIVE SIZE OF THE UNITED STATES.

8. Capes and Peninsulas: Cod, Ann, Henlopen, Charles, Sable, Saint Blas, Henry, Hatteras, Lookout, Fear, Canaveral, Mendocino, Blanco, Flattery, Prince of Wales, May, Sandy Hook, Cape Cod, Florida, Michigan, Delaware.

9. Islands: Mt. Desert, Nantucket, Martha's Vineyard, Long, Staten, Santa Barbara, Baranoff, Kodiak, Apostle, Aleutian, Saint Lawrence.

10. Gulfs and Bays: Cape Cod, New York, Delaware, Chesapeake, Appalachee, Tampa, Mexico, Mobile, Galveston, San Francisco, Bristol, Penobscot, Green, Saginaw, Passamaquoddy, Massachusetts, Buzzard's, Monterey, Casco.

11. Lakes: Great Lakes, Champlain, George, Moosehead, Chesuncook, Seneca, Cayuga, Chautauqua, Okeechobee, Pontchartrain, Schoodic, Grand, Winnipiseogee, Umbagog, Sebago, Winnebago, Peoria, Itasca, Lake of the Woods, Okoboji, Yellowstone, Tulare, Pyramid, Klamath, Great Salt, Red, Humboldt, Memphremagog.

12. Rivers.
   - A. Saint Lawrence System: Saint Louis, Menominee, Saint Mary's, Grand, Saint Clair, Detroit, Muskegon, Maumee, Genesee, Oswego, Niagara, Saint Lawrence, Kalamazoo, Fox.
   - B. Atlantic System: Saint John, Saint Croix, Penobscot, Kennebec, Androscoggin, Merrimac, Connecticut, Housatonic, Hudson, Mohawk, Delaware, Susquehanna, Potomac, Shenandoah, Rappahannock, York, James, Roanoke, Neuse, Cape Fear, Great Pedee, Yadkin, Santee, Savannah, Ogeechee, Altamaha, Saint Mary's, Saint John's.

C. Gulf System: Mississippi, Missouri, Arkansas, Red, Ohio, Tennessee, Cumberland, Wabash, Kentucky, Scioto, Big Sandy, Great Kanawa, Allegheny, Monongahela, Miami, Kaskaskia, Illinois, Rock, Wisconsin, Chippewa, Saint Croix, Minnesota, Red Cedar, Iowa, Des Moines, Milk, Marias, Yellowstone, Little Missouri, James, Big Sioux, Niobrara, Elkhorn, Platte, Kansas, Osage, White, Saint Francis, Canadian, Washita, Yazoo, Pearl, Sabine, Trinity, Brazos, Colorado, Rio Grande, Pecos, Mobile, Alabama, Tombigbee, Appalachicola, Flint, Chattahoochee, Suwanee.

D. Pacific System: Colorado, Gila, Grand, Green, Humboldt, San Joaquin, Sacramento, Salina, Klamath, Columbia, Snake, Salmon, Williamette, Clarke's, Merced.

13. Population, 1910, 91,972,266, of which 9,828,294 were Negroes.

A. Immigration; emigration.

B. Races and nationalities represented.

C. Per cent. of annual increase.

D. Density of population: rate of progress westward.

14. Religion: Protestant; Roman Catholic; Jewish; Mormon.

15. Cities: Washington, D. C., is the capital. The following fifty cities had a population of over 100,000 in 1910:

	1910	1900		1910	1900
New York, N. Y.	4,766,883	3,437,202	St. Paul, Minn.	214,744	163,065
Chicago, Ill.	2,185,283	1,698,575	Denver, Colo.	213,381	133,859
Philadelphia, Pa.	1,549,008	1,293,697	Portland, Ore.	207,214	90,426
St. Louis, Mo.	687,029	575,238	Columbus, O.	181,511	125,560
Boston, Mass.	670,585	560,892	Toledo, O.	168,497	131,822
Cleveland, O.	560,663	381,768	Atlanta, Ga.	154,839	89,872
Baltimore, Md.	558,485	508,957	Oakland, Cal.	150,174	66,960
Pittsburgh, Pa.	533,905	451,512	Worcester, Mass.	145,986	118,421
Detroit, Mich.	465,766	285,704	Syracuse, N. Y.	137,249	108,374
Buffalo, N. Y.	423,715	352,387	New Haven, Conn.	133,605	108,027
San Francisco, Cal.	416,912	342,782	Birmingham, Ala.	132,685	38,415
Milwaukee, Wis.	373,857	285,315	Memphis, Tenn.	131,105	102,320
Cincinnati, O.	363,591	325,902	Scranton, Pa.	129,867	102,026
Newark, N. J.	347,469	246,070	Richmond, Va.	127,628	85,050
New Orleans, La.	339,075	287,104	Paterson, N. J.	125,600	105,171
Washington, D. C.	331,069	278,718	Omaha, Neb.	124,096	102,555
Los Angeles, Cal.	319,198	102,479	Fall River, Mass.	119,295	104,863
Minneapolis, Minn.	301,408	202,718	Dayton, O.	116,577	85,333
Jersey City, N. J.	267,779	206,433	Grand Rapids, Mich.	112,571	87,565
Kansas City, Mo.	248,381	163,752	Nashville, Tenn.	110,364	80,865
Seattle, Wash.	237,194	80,671	Lowell, Mass.	106,294	94,969
Indianapolis, Ind.	233,650	169,164	Cambridge, Mass.	104,839	91,886
Providence, R. I.	224,326	175,597	Spokane, Wash.	104,402	36,848
Louisville, Ky.	223,928	204,731	Bridgeport, Conn.	102,054	70,996
Rochester, N. Y.	218,149	162,608	Albany, N. Y.	100,253	94,151

16. Occupations: Agriculture, manufacturing, mining, transportation, fishing, etc.

17. Products:

A. Every food-producing vegetable, except those requiring the hottest climate, is grown.

B. The most important cereal is corn, which is raised in every state.

C. The next in importance are hay, wheat and cotton.

D. Barley, oats, buckwheat, rye, flax, potatoes and tobacco are raised.

E. Sugar is produced from cane in Louisiana and from beets in the western states. Maple sugar is produced in the New England states, Ohio, New York and Pennsylvania.

F. California and Florida produce oranges, lemons, pineapples and other tropical fruits.

G. The states bordering on the Gulf of Mexico are the cotton states, Texas ranking first and Mississippi second.

H. Kentucky is the leading tobacco state with Virginia and the bordering states following.

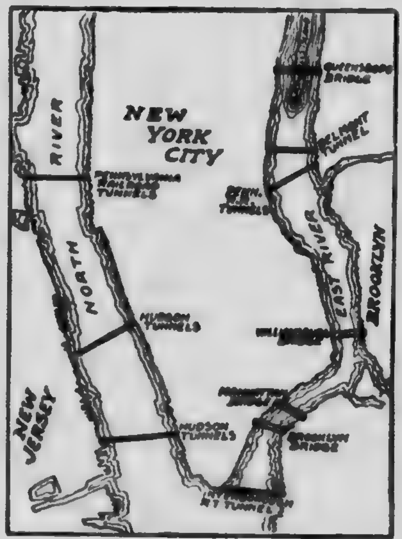
I. Iowa and Illinois are the leading corn states, closely followed by others in the same latitude.
J. Minnesota and North Dakota lead in the production of wheat.
K. Potatoes are produced, every state contributing its share.

18. Government: Republic.
- A. Executive department.
  - a. President elected by the people.
  - b. Heads of departments appointed by President, confirmed by senate.
  - c. Ministers to foreign countries are appointed by the President.
- B. Legislative department.
  - a. Senate; composed of two senators from each state.
  - b. House of representatives; composed of members elected by the people of the several states according to population.
- C. Judicial department.
  - a. United States judges who are appointed for life by the President.

The government of the states is similar to that of the United States, being vested in a governor, senate and house of representatives and state judges, all elected by the people.

Wonders of the United States.

Yellowstone National Park. This remarkable region is located mainly in the northwestern corner of Wyoming and is 54 by 62 miles in extent. It has been set apart by the United States government, under the control of the Secretary of the Interior, and is not subject to private ownership or settlement. It has about 100 geysers throwing hot water from 50 to 300 feet high. The average elevation is one and a half miles, while some of the peaks are over two miles high. The thermometer rarely if ever rises higher than 70° and it freezes every month in the year. The Yellowstone, Gallatan, Madison and Snake rivers rise within the Park. Yellowstone Lake is 22 miles long by 15 miles wide and 1½ miles above sea-level. The Yellowstone **Lake** surpasses all other regions of the world in the number and magnitude of its hot springs and geysers.



BRIDGES AND TUNNELS

Subways or Tunnels. New York City has the most complete system of subways, extending not only the entire length of Manhattan, but penetrating under the Hudson to Jersey City and under the East River to Brooklyn. Electric trains are also operated in subways in Boston and a similar system is being installed in Chicago.

Washington Monument was commenced in 1848 and finished in 1884. It is 55 feet square at the base and 555 feet high. It is situated in the city of Washington, D. C.

Lick Observatory. A large observatory on Mount Hamilton, in California. It contains the largest telescope ever made with the exception of the one now at Yerkes Observatory, near Chicago, and enjoys unusual advantages on account of its elevated position.

Brooklyn Bridge. A suspension bridge across East River, between New York and Brooklyn. The entire length of the bridge is 5989 feet, or over a mile. Several other equally remarkable bridges span the East River.

Cleopatra's Needle, an Egyptian obelisk of granite, was first erected in Heliopolis, Egypt, 1100 B. C. It was brought to New York in 1880 and placed in Central Park.

The Panama Canal, which crosses the Isthmus of Panama and connects the Atlantic with the Pacific, is the largest engineering enterprise undertaken by the United States and by the world.

High Buildings: New York City has the highest buildings in the world. Of these the Woolworth is the most noted, having 51 stories and being 775 feet high. Other high buildings in New York City include the Metropolitan, 50 stories and 700 feet high; the Singer, 42 stories and 612 feet high; the Municipal, 24 stories and 560 feet high; and the Bankers' Trust, 39 stories and 539 feet high.

Yosemite Valley. A remarkably deep gorge in Mariposa County, California, the bottom being nearly a mile below the level of the surrounding country. It is about 150 miles southeast of San Francisco, 7 miles long and from one-half to a mile wide. Immense columns of rock rise almost perpendicularly from 2000 to 3000 feet and there are numerous waterfalls, one of which descends 2600 feet in three leaps. The Merced River rises in the Sierra Nevada mountains and flows through the valley, forming the Bridal Veil Falls and other beautiful falls. This river is utilized for irrigation purposes in its lower course. This valley has been set aside as a public park under the control of California.

BARTHOLDI'S STATUE OF LIBERTY.

The Big Trees of California are found near the Yosemite Valley, many of them in the same county, and others farther north. Many of them are from 275 to 376 feet high, and from 25 to 31 feet in diameter.

The Mammoth Cave is a large cavity in the ground near the Green River, in Kentucky. It extends 8 or 10 miles under ground and contains many chambers and passages, some of the former being 200 to 300 feet high.

Erie Canal, the largest and most important canal in the United States, extends from Albany to Buffalo, a distance of 363 miles. It is 70 feet wide at the top, 40 at the bottom and 7 feet deep. It crosses several large streams on stone aqueducts.

Hoosac Tunnel, northwestern Massachusetts, on a railroad between Boston and Troy, N. Y. It is a little over 4¾ miles long and large enough for two lines of railway trains.

Chicago Tunnel. Chicago is supplied with water brought through two tunnels from Lake Michigan. They extend under the bed of the lake a distance of several miles.

Bartholdi's Statue of Liberty. This statue is located on Bedloe's Island, in New York harbor. It is the highest statue in the world, being 306 feet above mean tide. It was presented to the United States by France in 1886 to commemorate the 100th anniversary of its independence, as a token of friendship between the two countries. 1582.

Liberty.

Written by Bernhart Paul Holst, after visiting New York Harbor
on Aug. 14, 1905.

Hail to the woman with the torch of fire,
Standing on Bedloe's Isle the world to guide!
Beacon to pilgrims of worthy sire,
Guide to the homeless! Far and wide
Has thy mighty welcome blazed its way
To all earth's tired as well as me,
And now I see the break of better day,
The dawn of freedom and of liberty!

Unlike the brazen Rhodes of Grecian lore,
With mighty limbs from land to land;
She stands upon the eastern sea-washed shore,
The emblem of the free in heart and hand!
Her face is glad with Music of the Spheres,
Her eyes as stars in glowing beauty shine,
She lights the path to peace in future years,
She progress gives to me and all of mine!

Long centuries had pressed upon the poor,
Had made them dead to joy and faith and fear;
They could not hope to see an open door,
So pressed with pain, could scarcely shed a tear:
The Tragedy of Time caused head to bow,
The Wheel of Labor made the back to bend;
Profaned and robbed, what could they do, and how?
What shores to them would friendly welcome send?

The masters and the lords of royal blood
With monstrous mandates crushed the living soul,
And ground man down with burdens and the flood
Of wars. And, as the years and ages roll,
Refused to right the base perfidious wrongs
That dwarf and stun the much-bewildered brain—
But, hark! I hear the welcome, new-born song
And see the torch of liberty again!

Glides now the ship to anchor in the bay
Soon will I tread the shore of my adopted land
And breathe a purer spirit, blesséd day,
As I step on the far-enchanted strand!
This heritage is nature's noblest gift
To man, and to the multitudes that come,
As well as all who long have been adrift,
And rest at last to make this land their home.

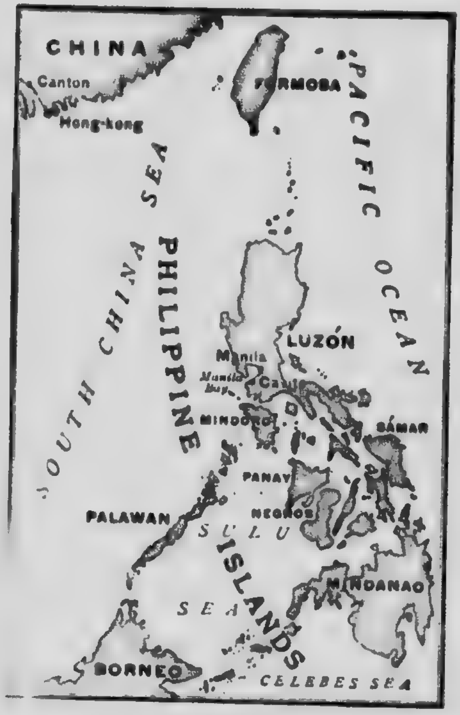
Hail to the woman with the torch of fire,
Standing on Bedloe's Isle the world to guide!
Beacon to pilgrims of worthy sire,
Guide to the homeless! Far and wide
Has thy mighty welcome blazed the way
To all earth's tired as well as me,
And now I see the break of better day,
The dawn of freedom and of liberty!

Dependencies of the United States.

1. Alaska: Bought of Russia in 1867.
    - A. Area: 590,881 square miles, twice the size of Texas.
    - B. Surface: Mountains; Mount McKinley; Mount Shasta.
    - C. Drainage: Yukon River Valley is most important.
    - D. Climate: Lies in path of westerly winds; equable along coast; plentiful rainfall; interior, colder and drier. Muir Glacier is the largest in the world.

E. Products: Gold, coal, fish, sealskins, furs.
F. Cities: Sitka, Juneau, Wrangell.

2. Hawaii: Belonged to United States since 1898 by annexation.
   - A. Located about one-third of the way across the Pacific Ocean.
   - B. Consists of twelve islands; combined area equal to size of Connecticut.
   - C. Population of over 200,000.
   - D. Surface: Mountainous and volcanic; Mauna Loa, Mauna Kea, Kilauea.
   - E. Products: Sugar, rice, bananas, live stock.
   - F. Capital: Honolulu, modern; good wharves; splendid trade.



3. Philippines: Possession of United States since 1898.
   - A. Area: Include 3,141 islands; equal in size to Arizona.
   - B. Population: Over 7,000,000, chiefly of the yellow race; over 30 dialects spoken.
   - C. Climate and Vegetation: Tropical everywhere; rainfall abundant; dense vegetation.
   - D. Products: Hemp, sugar, coffee, cocoanut, tobacco, indigo, rice, cabinet woods, dyes, gold, coal, copper, silver, lead.
   - E. Cities and Trade: Manila, Iloilo; United States receives half of the exports, which are mainly hemp, sugar, tobacco and fruits.

4. Porto Rico: Ceded to United States in 1898 as a result of Spanish American War.
   - A. Area: One of the largest of the West Indies; about 3½ times the size of Rhode Island.
   - B. Population: Spanish descent and negroes; very dense over a million.
   - C. Surface and Climate: Diversified with mountains, coastal plains; warm; abundant rainfall.
   - D. Products: Cabinet woods, sugar, tobacco, coffee, tropical fruits.
   - E. Towns: San Juan, Ponce, Mayagues, Arecibo, San German.

5. Other Islands: Guam, Tutuila, Howland, Baker, Wake, Midway, Marcus.

Questions on the United States.

Compare the United States in size with Canada and Australia.

Illustrate by a map the transcontinental railroads of United States and Canada.

Why are Puget Sound and San Francisco Bay so important to the Pacific Coast? Why is Spokane, Washington, called the Minneapolis of the west?

Where are the largest meat and grain centers of United States? Name our twenty largest cities and tell something for which each is noted.

Contrast the methods of farming and the farm products of the Mississippi Valley with those of the western states.

When and for what purpose were the Philippine Islands purchased by the United States? Of what particular value are the Hawaiian Islands?

In imagination trace a ship load of grain from Chicago to Liverpool.

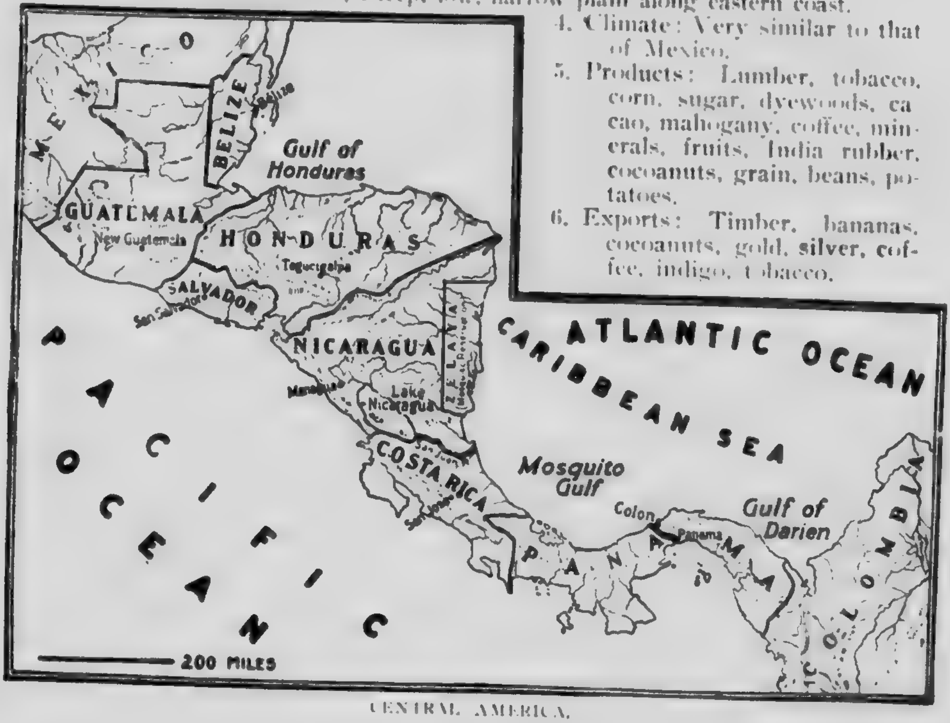
Which are the cotton and rice producing states? Where are iron, petroleum, coal, gold and silver produced most abundantly?

Name ten points of interest because of their scenic beauty. Name ten points noted historically.

What are the three great industries of Alaska? Is Alaska a paying possession of the United States?

Central America.

1. Divisions: Honduras, Guatemala, Salvador, Panama, Nicaragua, Costa Rica, Panama Canal Zone.
2. Location, boundaries, area.
3. Surface: Mountainous, except low, narrow plain along eastern coast.
4. Climate: Very similar to that of Mexico.
5. Products: Lumber, tobacco, corn, sugar, dyewoods, cacao, mahogany, coffee, minerals, fruits, India rubber, cocoanuts, grain, beans, potatoes.
6. Exports: Timber, bananas, cocoanuts, gold, silver, coffee, indigo, tobacco.



CENTRAL AMERICA.

Mexico.

1. Location, boundaries, size.
2. Draw a map and locate mountains, rivers, lakes, Tropic of Cancer, etc. Paint a map of Mexico, indicating the chief products in their proper locality.
3. What and where are: Tehuantepec, Corrientes, San Lucas, Yucatan, Matamoras, Catoche, Campeche, Cozumel, Angel de la Guarda, Petén, Chapala.
4. Surface: Cordillera Highlands, Central Plateau, Coastal Plains. Mountains and Volcanoes: Sierra Madre, Orizaba, Popocatepetl, Ixtaccihuatl, Colima.
5. Drainage: Rio Grande, Rio Conchos, Rio Salado and Larma rivers; Lake Chapala.

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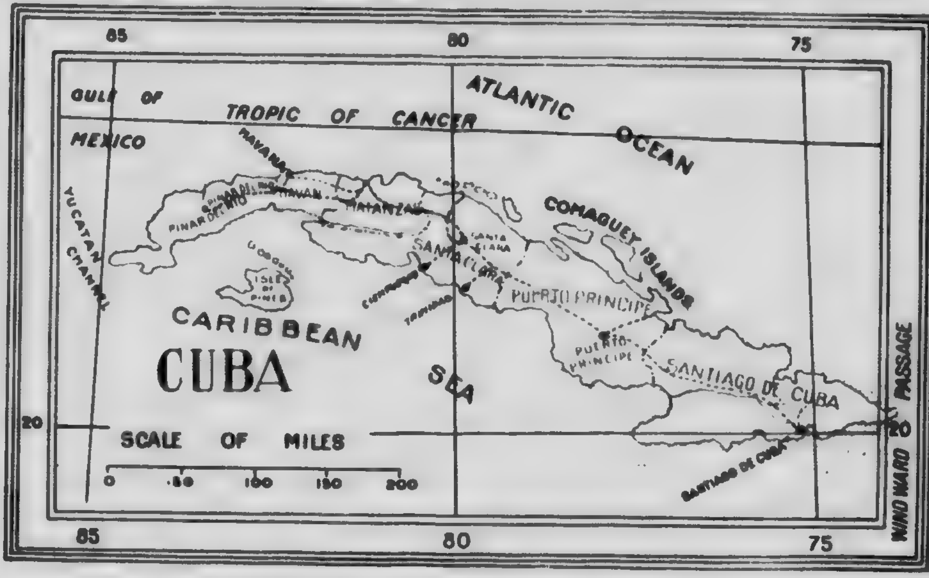
6. Climate: Lies in the Hot Belt; temperature is greatly diversified, being somewhat cold in the highlands, equable inland and hot along the coast. Rainy season begins in May and continues until October.
7. Occupations: Agriculture, stock raising, mining, manufacturing, commerce.
8. Products: Cotton, coffee, cacao, vanilla, corn, beans, tobacco, dyestuffs, agaves, wool, sugar, gold, silver, copper, iron, coal, quicksilver, sulphur, building stone.
9. Exports: Silver, gold, coffee, woods, copper, hides, tobacco, fruits, vanilla. Imports: Coal, machinery, manufactured articles.
10. People: Spanish descendants, whites, Indians. Official language is Spanish. Principal religion, Roman Catholic. Government is republican in form.
11. History: Conquered by Cortez early in 16th century. Remained a Spanish dependency for 300 years, gaining independence in 1821; Revolutions.
12. Cities: Mexico—capital, Acapulco, Manzanillo, Mazatlan, Manzanillo, Tampico, Vera Cruz.

West Indies.

1. Names; number; area; countries or possessions.
2. Origin: Chiefly volcanic or of coral formation.
3. Surface: Rather rugged; some high mountain peaks.
4. Climate: Tropical; hot and unhealthful in the lowlands; moderate on the higher elevations; two seasons—wet and dry.
5. Products: Sugar, tobacco, rum, cotton, coffee, maize, yams, pineapples, citron, lemons, potatoes, oranges, maniocs, indigo, aloes, pepper, sassafras, timber, gold, silver, coal, lead, copper, tin, manganese, limestone, granite.



Questions on Mexico and Central America.

How can we account for the diversity of climate in Mexico? What effect has this varied climate on the vegetation? 1773.

How does Mexico compare with other countries of the world in its mineral wealth? Name the most important of its mineral products.

What can you say of the manufactures and commerce of Mexico?

RELIEF MAP OF SOUTH AMERICA.

Give a brief discussion of the history. What recent changes have occurred in its government?

What are the political divisions of Central America? Name the principal cities. 521.

How will ocean trade routes be shortened by the Panama Canal?

What are the exports of Central America?

South America.

1. Position; size—extent, area, comparative.
2. Outline: Regular or irregular. Make a list of the projections and indentations.
3. Make a map showing the various political divisions and learn to spell them. Mold a physical map with clay.
4. Surface: Cordillera, Brazilian and Guiana Highlands, Plateau of Bolivia and Patagonia, llanos, pampas, and selvas.
5. Drainage: Amazon, Orinoco, Parana, Paraguay, São Francisco, and Magdalena rivers. Lakes: Titicaca and Maracaibo.
6. Climate: Located in torrid and south temperate zones; two seasons—wet and dry; lofty highlands and extreme southern part are the colder sections; enormous rainfall on northeastern Atlantic slope and valley of the Amazon; dry belt along the coast of Peru and Chile.
7. Cities: Name the capital of each country. Locate the following: Bahia, Pernambuco, Rosario, Valparaiso, Iquique, Paunta Arenas, La Paz, Valencia.
8. Products: Coffee, rubber, sugar, tobacco, cacoa, cotton, dyewoods, hides, dyewoods, diamonds, wool, mutton, wheat, medicinal plants, gold, silver, guano, nitre, mercury, borax, beans.
9. Exports: Coffee, cotton, silk, borax, silver, lumber, hides, tobacco, medicinal plants, mutton, beef, wool.
10. Population: Smallest of any continent except Australia; Indians, Spaniards, Portuguese, Italians, Germans.
11. History: Discovered by Columbus. Explored and developed by Spaniards and Portuguese. Simon Bolivar was the greatest leader. All the countries are republics, except Guiana, which belongs to England, France and the Netherlands.

Questions on South America.

Name the two largest countries of South America. For whom was Bolivia named? 136, 327.

What is the general form of this continent? Describe its three greatest river systems.

What and where are the llanos, pampas and selvas? Briefly describe the animals which inhabit South America.

Which countries are republics? Which countries are controlled by European powers? 2685.

What are the chief products and exports of Brazil? 361.

Who were the Incas? What can you tell of the people of Peru? 1371, 2169.

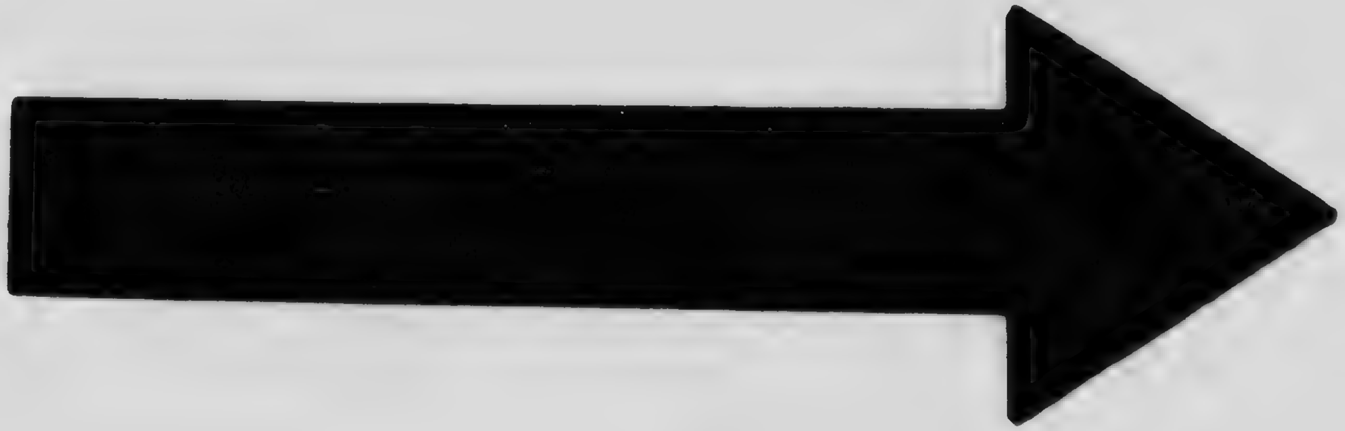
What is the prevailing religion of South American countries? What language is most generally spoken?

Describe the surface and drainage of Chile. Name its chief cities and tell something for which each is noted. 559.

Name and locate the principal seaports of South America. Describe the city of Buenos Ayres. 397.

Europe

1. **Position; boundaries; outline; size; importance.**
2. Surface.
   - A. Plain or Plateau: Great Lowland, Wallachian, Bohemia, Lombardy, France.
   - B. Mountains: Ural, Balkan, Carpathians, Alps, Apennines, Pyrenees, Cantabrian, Kjolen, Sierra Morena, Cévennes, Etna, Blanc, Vesuvius.
3. Drainage.
   - A. Rivers: Pechora, Dwina, Ural, Volga, Don, Dnieper, Dniester, Danube, Po, Rhone, Guadalquiver, Guadiana, Tagus, Douro, Loire, Seine, Rhine, Elbe, Oder, Vistula, Duna, Thames, Clyde, Shannon, Tiber, Theiss, Garonne, Weser, Aar, Humber, Trent.
   - B. Lakes: Onega, Ladoga, Wener, Wetter, Geneva, Constance, Maggiore, Como, Lomond, Erne.
4. Seas, Gulfs, Bays: Kara, Caspian, Black, Aegean, Adriatic, Mediterranean, Biscay, Irish, North, Baltic, Finland, Bothnia, Azov, Marmora, White, Lion, Genoa, Riga, Ionian, Venice, Taranto, Salonica, Archipelago.
5. Straits and Channels: Kattegat, Skager Rak, Dover, English, Gibralter, Messina, Dardanelles, Bosporus, Saint George's, North, The Minch, Little Minch, Great Belt, Little Belt, Otranto, Bonifacio, Enikale.
6. Capes and Peninsulas: Land's End, Finisterre, Saint Vincent, Matapan, Clear, Wrath, Duncansby Head, North, Iberian, Scandinavian, Italian, Crimean, Morea, Jutland.
7. Islands: Great Britain, Ireland, Iceland, Hebrides, Orkney, Shetland, Lofoden, Zealand, Fünen, Gothland, Balearic, Corsica, Sardinia, Sicily, Candia, Cyprus, Malta, Ionian, Elba, Majorca, Oesel, Nova Zembla.
8. Cities: Capital cities and Liverpool, Birmingham, Manchester, Leeds, Bristol, Sheffield, Salford, Hull, Newcastle, Glasgow, Dundee, Aberdeen, Belfast, Cork, Limerick, Waterford, Londonderry, Lyons, Marseilles, Bordeaux, Lille, Toulouse, Havre, Dover, Geneva, Basel, Zurich, Lucerne, Naples, Milan, Turin, Palermo, Genoa, Florence, Venice, Bologna, Hamburg, Breslau, Munich, Dresden, Leipsic, Cologne, Hanover, Amsterdam, Rotterdam, Utrecht, Odense, Buda-Pesth, Prague, Trieste, Saint Petersburg, Warsaw, Odessa, Riga, Kishinev, Cracow, Barcelona, Valencia, Seville, Malaga, Antwerp, Ghent, Liege, Salonica, Adrianople, Varna, Sophia, Jassy, Hermopolis, Oporto, Gottenburg.
9. Climate: Moderate and very agreeable in the west, owing to warm ocean currents; colder in north and east; warm in south.
10. Occupations: Manufacturing, commerce, mining, quarrying, farming, stock raising, dairying, fishing, lumbering, fruit growing.
11. Products: Grapes, wine, silk, olive oil, cork, petroleum, amber, sponges, coal, iron, rice, grain, tropical fruits, lumber, pottery.
12. People and Religions: Most densely and completely inhabited continent, but divided among many nations. People are mostly of the white race and the remainder of the yellow race. Christian religion prevails, though Jews and Mohammedans are numerous. Educational uplift in all the countries is marked.
13. History: Settled by people from Asia. Four republics and remainder are constitutional monarchies.



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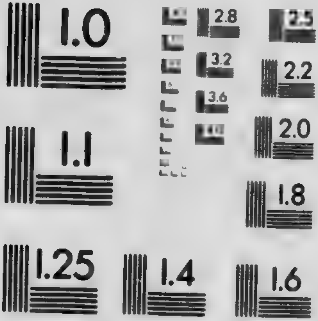

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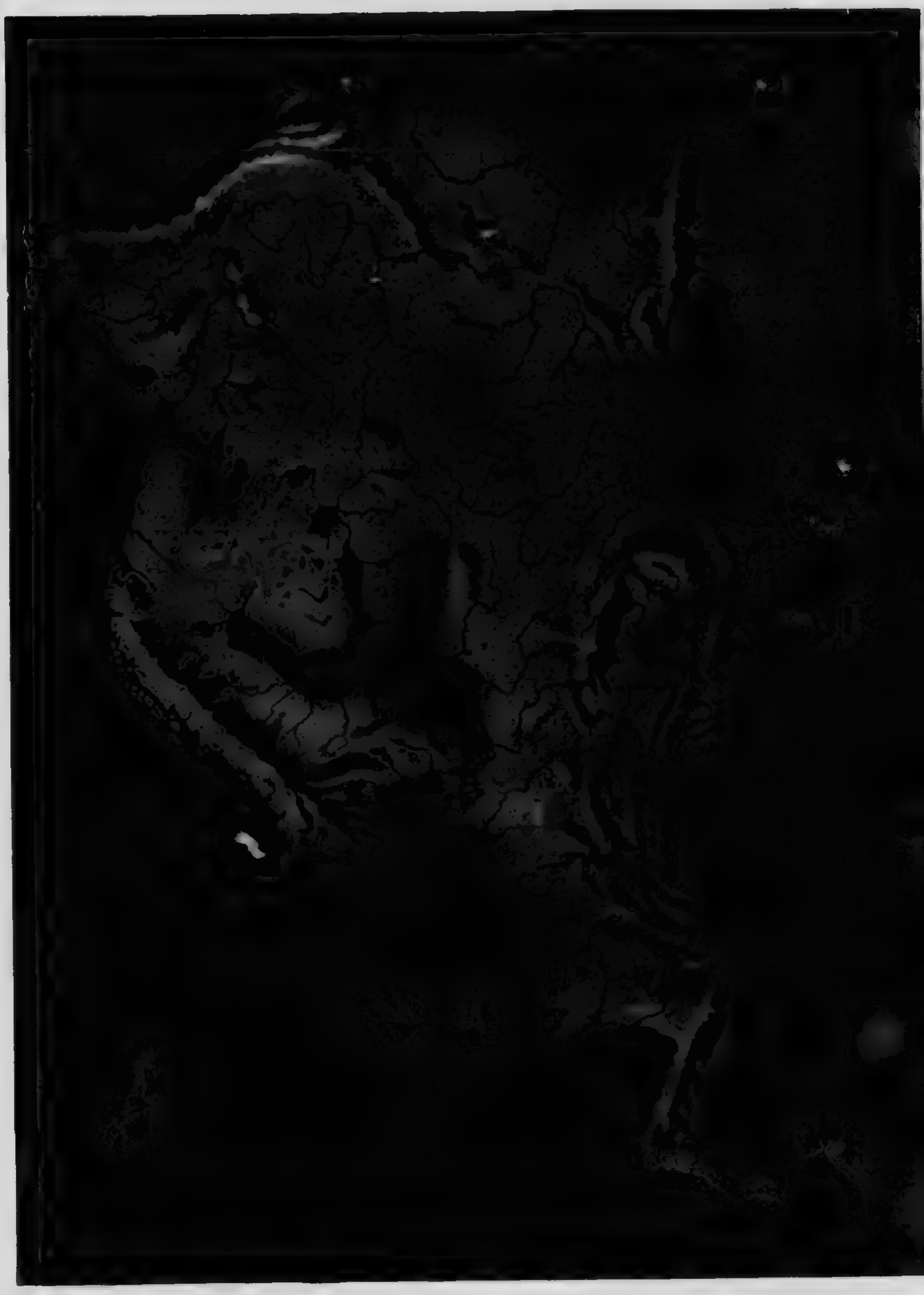

Questions on Europe.

Name and locate the capes, bays and peninsulas of Europe. 948.

Of what is Great Britain composed? Name ten important cities of the British Isles. 1186.

State the form of government of each of the European countries. Which country ranks highest educationally? 1127.

How is Russia progressing along commercial lines? Name the exports. 2466.

Describe the city of Paris. Tell about the defense of the country of France. 2105, 1047.

What are the Scandinavian countries? Briefly describe the people and industries of the Netherlands. 2545, 1925.

Which countries form the Iberian Peninsula? Describe their surface, industries and products. 2694, 2885.

Describe the government of France. Name the colonial possessions of France. 1046, 1047.

Describe the literature of Denmark. What is the capital? 783.

How does Belgium rank in its railroad mileage? Name the manufactures. Describe Antwerp and Brussels. 265, 115, 389.

Which is the smallest country of Europe? What can you tell of the early history and literature of Greece? 1194, 1836.

Describe the climate and products of Italy. Name its chief cities, giving important facts about each. 1419.

Asia.

1. Location; size; outline.
2. Population: More than five-sixths of entire population are found in China and India and the monsoon countries. Three-fourths of the people belong to the yellow race, remainder to the white race, Malays, etc. More than half of the human race live in Asia. Mohammedanism, Brahmanism, Buddhism, and Confucianism are numerically strongest, but the Christian and Jewish religions are well established.
3. Draw a map of Asia, locating the various countries with their chief rivers, mountains, lakes, and chief cities. Mold a physical map of this continent. Paint and draw a product map of Asia.
4. Surface: Northern, southern and central sections.
    - A. Plateaus and Plains: Tibet, Iran, Deccan, Table-land of Asia Minor, Armenian and Kurdistan Highlands, Plains of West Turkistan, Kobdo, Mongolian, Great Iberian, Pamir.
    - B. Mountains: Stanovoi, Yablonovoi, Khingan, Tian Shan, Himalayas, Hindu Kush, Elburz, Caucasus, Altai, Kuenlun, Ararat, Ural, Everest, Sinai, Eastern and Western Ghats.
    - C. Rivers: Ob, Yenisei, Lena, Amur, Hoangho, Yangtsekiang, Mekong, Salwin, Ganges, Indus, Tiger, Euphrates, Syr Daria, Godavery Brahmaputra, Cambodia, Irrawaddy, Angara, Sihon, Amu, Canton, Shat-el-Arab.
    - D. Lakes: Baikal, Aral, Balkash, Urumia, Poyang.
5. Capes and Peninsulas: Kamchatka, Korea, Malay, Cambodia, Comorin, India, Arabia, Rumania, Deshnef, Chelyuskin, East, North, Yalmal, Dondra Head.
6. Islands: Ceylon, Formosa, Andaman, Sumatra, Borneo, Java, Celebes, New Guinea, Philippine, Formosa, Mindanao, Luzon, Molucca or Spice, Hainan, Hondo, Yezo, Kiushiu, Sakhalin, Nova Zembla, Flores, Timor, Cyprus.
7. Seas, Gulfs and Bays: Behring, Okhotsk, Japan, Yellow, East China, South China, Siam, Bengal, Arabian, Persian, Aden, Red, Mediterranean, Black, Caspian, Martaban, Pechili, Manar, Cambay, Oman, Kamar, Ob, Tongking.

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RELIEF MAP OF ASIA

8. Straits and Sounds: Bab-el-Mandeb, Malacca, Formosa, Korea, Tartary, La Perouse, Behring, Ormus, Palk, Sunda, Macassar, Hainan.

9. Cities: Kabul, Tokyo, Mecca, Maskat, Aden, Medina, Yokohama, Peking, Canton, Tientsin, Hang Chow, Foo Chow, Shanghai, Calcutta, Bombay, Madras, Delhi, Benares, Cawnpore, Bangkok, Saigon, Mandalay, Singapore, Hue, Tiflis, Samarkand, Irkootsk, Omsk, Tobolosk, Teheran, Tabris, Meshed, Ispahan, Smyrna, Damascus, Aleppo, Bagdad, Jerusalem, Beyrout.

10. Climate: Owing to its great extent, Asia has the most strongly marked continental climate in the world. Northern Siberia contains the coldest region in the world. It is very hot in the south. Two seasons, hot and dry, occur. Extreme elevations, trade winds, adjacent bodies of water, etc., have their effects on the various countries.

11. Occupations: Hunting, fishing, trapping, lumbering, farming, stock-raising, silk industry, fruit-growing, manufacturing, commerce, quarrying.

12. Products: Fish, furs, grains, rice, dates, coffee, banyan, mahogany, gum, opium, sugar-cane, cotton, tobacco, spices, pepper, yam, tropical fruits, tea.

13. Countries: China, a republic, includes Manchuria, Mongolia, Turkistan and Thibet. The country is mountainous, except a great plain between the Yangtsekiang and Hoang-ho Rivers. The great wall is over a thousand miles long. Tea is the most important vegetable production. Rice and fish constitute the bulk of the food of the Chinese. The chief imports are opium, cotton goods, metals, woolen goods and coal. The exports are tea, silk and sugar. The greater part of the Chinese are Buddhists.

British India includes Hindustan, Burmah, Ceylon, Aden, Baluchistan, and Sokotra. Agriculture is in a very backward state, although it is the principal occupation. Rice, cotton, wheat, opium, etc., are the chief products. Raw materials are exported and manufactured goods are imported. The inhabitants are principally Hindus, belonging to the Caucasian race, and Brahmanism is the prevailing religion, but there are many Buddhists and some Mohammedans.

Afghanistan, Arabia, Persia, and Siam are independent. Anam and Cambodia are under the control of France. Siberia, including all the territory north of Afghanistan and west of China, belongs to Russia. The Straits Settlements and Aden belong to Great Britain, and the west coast of Arabia, including Yemen, belongs to Turkey. Corea belongs to Japan, which is an empire.

The Philippines are a possession of the United States; the Carolines belong to Germany, and most of the East Indies belong to the Netherlands.

Questions on Asia.

What can you say of the population of Asia as compared with that of other continents? Which countries of Asia have the largest population and what races do they represent?

Name and locate the mountain ranges of Asia. Where are the plateau sections? 164.

Locate the Trans-Siberian Railway and indicate the chief stations along the road. 2368.

Contrast the farming of India with that of the United States. What are the principal products of India? 1375.

Describe the present form of government in China. Briefly discuss the educational situation. 566.

How do you account for the present progress in Japan? What are the chief exports? 1439.

Make a list of the gulfs, bays and seas of Asia. What are the most important peninsulas?

State some historical connection regarding the following: Jordan, Damascus, Mecca, Manila, Hankow, Port Arthur, Korea, Bagdad and Ceylon.

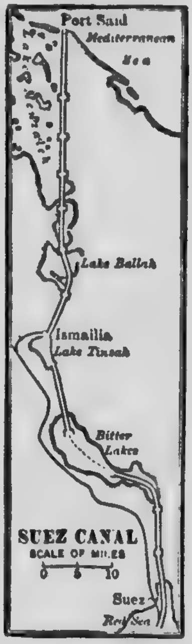
Describe the Himalaya mountains and tell which rivers are fed by the streams therefrom.

What are the chief industries of the Persians? For what are they especially noted? 2161.

What religions predominate in Asia? Briefly discuss the domestic life of the Arabians. 121.

Africa.

1. Location and boundaries.
2. Form, size and area.
3. Study the outline and make a free-hand cutting of Africa. Study the physical features, then mold Africa in sand or clay. Draw a map of the continent, showing the political divisions and cities.
4. Surface.
   - A. Mountains: Kilimanjaro, Kenia, Drakensburg, Snow, Mocambe, Crystal, Kameruns, Kong, Atlas, Ruwenzori.
   - B. Plateaus and Deserts: Algerian, Libyan, Nubian, Great Central, Kalahari, Sahara.
   - C. Rivers: Nile, Niger, Zambezi, Limpopo, Orange, Congo, Senegal, Tana, Juba.
   - D. Lakes: Chad, Victoria Nyanza, Nyassa, Albert Edward Nyanza, Tanganyika, Bangweolo.
5. Capes: Guardafui, Agulhas, Good Hope, Verde, Blanco, Spartel, Bon, Delgado, Frio, Corrientes, Amber, Sainte Marie.
6. Islands: Comoro, Madagascar, Annobon, Saint Thomas, Fernando Po, Cape Verde, Canary, Madeira, Azores, Mauritius, Réunion, Amirante, Seychelles, Saint Helena, Ascension, Princes, Sokotra.
7. Gulfs, Bays and Seas: Aden, Delagoa, Walfisch, Mediterranean, Red, Guinea, Gabes, Sidra.
8. Straits and Channels: Bab-el-Mandeb, Mozambique, Gibralter.
9. Cities: Alexandria, Khartum, Kairwan, Gondar, Damietta, Massush, Oran, Port Louis, Constantine, Tamative, Durban, Suez, Port Said, Cape Town, Johannesburg.
10. Climate: Africa, being in the hot belt, the climate is everywhere tropical, except in the extreme south. Various portions of the continent have a moderate climate on account of the trade winds and goldrums. Rainfall is extremely small except in the equatorial regions. Sahara Desert region is noted for its extreme heat.
11. People: Native people north of the Sahara belong to the white race. Europeans live along the coast and in some of the colonies. The blacks or Negro races abound in Africa. Religiously the people are classed as heathen, pagan, Mohammedan and Christian. Africa occupies third place among the grand divisions in population.
12. Countries and possessions.



The Suez Canal, 98 miles long, as compared with the Cape of Good Hope route, shortened the distance from Southampton to Bombay by 4,800 nautical miles. The canal stimulated the trade of all Mediterranean ports, and diverted shipping from Cape Town, formerly a coaling station on the sea route to India.

Questions on Africa.

What is the population of Africa and what is its rank among the other continents? What is said of the social conditions of this continent? 32.

RELIEF MAP OF AFRICA.

Name the independent countries of Africa. To whom do the other countries belong? Which European power possesses the largest scope of African territory? 33.

Describe the drainage of Africa. Which lake is passed through by the equator?

Give an interesting description of Egypt and the famous Nile system. 881, 1976.

Locate the capes of Africa. What large gulf is on the west coast?

Name the islands and island groups off the coast of Africa. How is Madagascar separated from the continent?

Name three large deserts of Africa. How is traffic carried on across them? 881, 1485, 2487. How is the great Assuan Dam useful to the Egyptians? 745.

Give a list of the animals of Africa. Which are most useful? Of what special value is the ostrich to these people?

What can you say of the transportation facilities of Africa? Describe the Cape-to-Cairo Railway. 472.

When and why was the republic of Liberia formed? Describe its government. 1581.

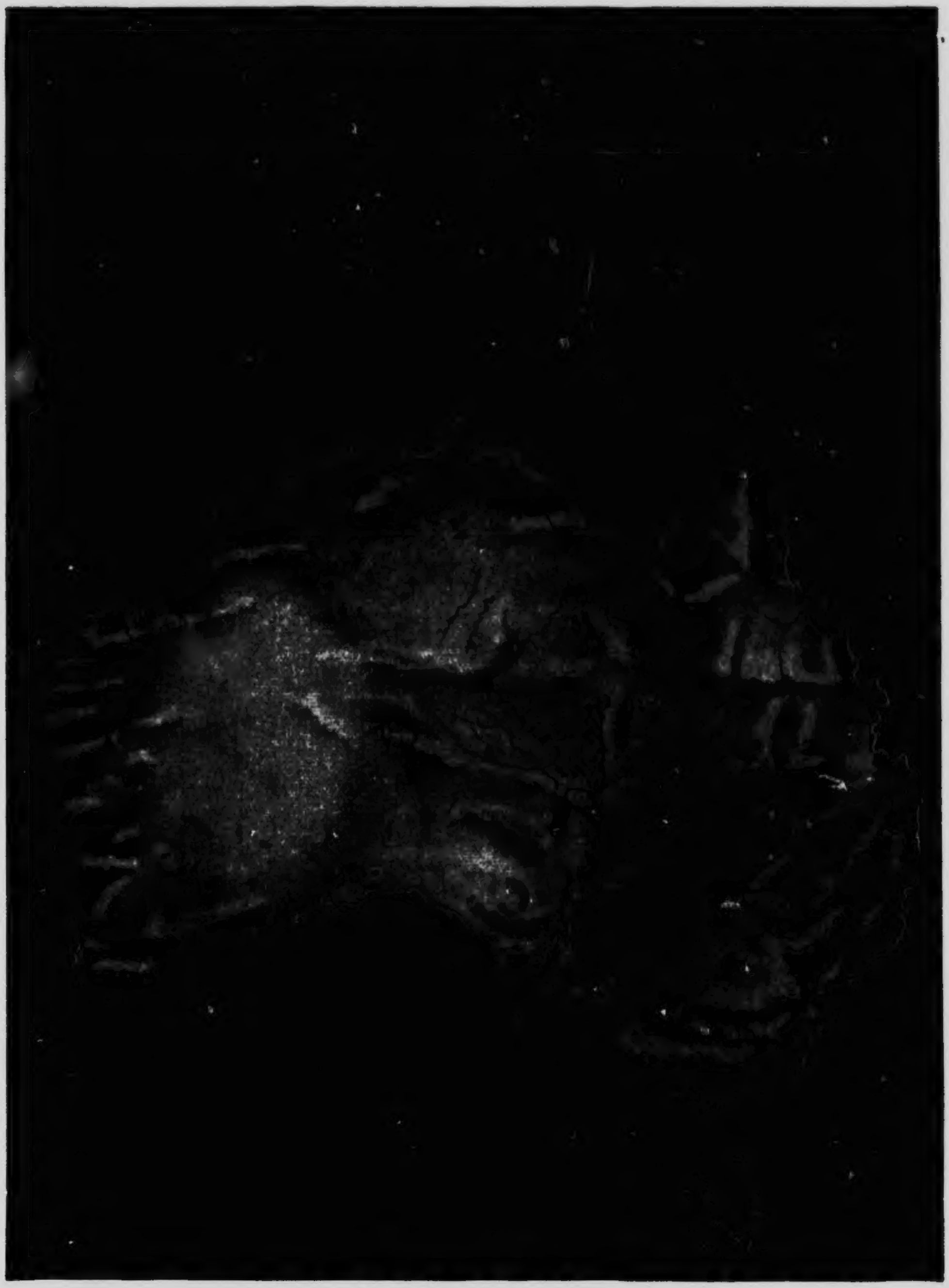
What can you say of the industries of Cape Colony? How do its diamond fields rank in the world? 468.

David Livingstone explored which portions of Africa? 1610.

Name the chief products of Sudan and of Nigeria. 2767, 1975.

Australia.

1. Location, boundaries, outline.
2. Size: Extent, area, comparative size.
3. Population: Natives belong to the lowest type of the Black race and are fast dying out. Large per cent. of the people are foreign, especially European. The English are largely responsible for the development of the continent.
4. Draw a map to show the political divisions, capitals and chief cities. Mold a relief map of Australia, showing the lowlands, highlands, divides, river systems, lakes, deserts, etc. Draw and paint a product map.
5. Surface: Interior is formed largely of sandy hillocks or plains. Australian Alps trend along the eastern coast. Highest peak is Mount Kosciusko. Low plains lie along the southern and northern coasts.
6. Drainage: Murray and Darling and the tributaries are the most important river system. Other rivers are the Victoria, Murchison and Cooper. Chief lakes are Amadeus, Eyre, Gairdner, Torrens and Austin.
7. Climate: Inland it is hot and dry, but the coasts are modified by healthful and pleasant sea breezes and rains. Eastern and southern slopes receive much moisture. Climate of the interior is characterized by great changes owing to excessively hot winds. Australia is crossed by the Tropic of Capricorn and is located in both the Torrid and South Temperate Zones.
8. Productions: Wool, live stock, cereals, tropical fruits, sugar-cane, tree ferns, canes, bamboo, palms, paper-bark, gum, tobacco, gold, silver, coal, tin, iron, pearls.
9. Government: Commonwealth of Australia consists of Victoria, Queensland, New South Wales, South Australia, Western Australia, and Tasmania. Governor general is appointed by sovereign of Great Britain and is assisted by ministry of Parliament. Bombala was made the capital in 1903.
10. Cities: Brisbane, Adelaide, Sydney, Melbourne, Hobart, Perth.



RELIEF MAP OF AUSTRALIA.

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Islands of the Pacific.

1. New Zealand: Consists of two islands. Surface is quite mountainous and has numerous hot springs and geysers. It is swept by warm, strong winds and has good rainfall. Raising of horses, cattle and sheep and mining of gold and coal are important industries. Exports consist of stock, butter, frozen mutton and wool. Auckland is a noted coaling station and Wellington is the capital.
2. Java: Principal island of the Dutch East Indies, a possession of the Netherlands. Chief exports are tea, coffee, sugar, cinchona, tobacco, pepper, indigo, horses, buffaloes and cattle.
3. Borneo: One of the largest islands of the world. It belongs to Holland and Great Britain. Productions are sago, rice, tobacco, pepper, gambier, coffee, cotton and tropical fruits. Forests abound.
4. Sumatra: One of the most productive island possessions of Holland. Mountainous surface, plentiful rainfall, abundant vegetation and extensive mineral wealth. Natives chiefly Malays. They are active, tall, intelligent, and quite industrious. Exports are numerous.
5. New Guinea: Possession of Germany, England and Holland. Largest island in Australasia. Principal products include lumber, sweet potatoes, rice, tobacco, sugar, yams, rum, maize, wheat, millet, sago, cocoa, and tropical fruits.
6. Polynesia: Archipelagoes of the Hawaiian Islands, Society, Cook, Marquesas, Tokelau, Phoenix, Tonga, or Friendly, Ellice, Fiji, Navigator's, and Tuamotu islands.
7. Micronesia: Principal archipelagoes include the Carolines, Ladrones, Marshall, Radack, Pelew, Gilbert, and Brown islands.
8. Melanesia: New Guinea, New Pommern, and the groups of Solomon, Loyalty, Huon, Chesterfield, New Caledonia, New Hebrides, Santa Cruz, Admiralty, Norfolk and Louisiade islands.

Questions on Australasia.

Of what is Australasia comprised? Into what divisions is the Commonwealth of Australia divided? 188, 191.

Describe the surface and drainage of Australia. What is said of the vegetation and minerals?

To whom does the Commonwealth of Australia belong? How is it governed?

Locate on a map the points connected by the Transcontinental Railway of Australia. What is the capital?

Which portions of Australia are most populous and why?

Describe a trip from New York City to Melbourne, Australia, naming the waters through which you would pass.

When and by whom was Tasmania discovered? What are its leading exports? 2822.

What is the leading industry of New Zealand? What is said of the progress of the people in social, civil and educational affairs? 1965.

What are the divisions of New Guinea and to whom do they belong? What are the products? 1940.

Locate New Caledonia and tell about its inhabitants. 1936.

Locate the Solomon Islands, New Hebrides, New Britain, New Ireland, Admiralty Islands, and the Arru Islands, and tell to whom each belongs.

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